FARMERS DIGEST

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Plan Now For Better Crops Next Summer

Not much is going on out in the fields this time of the year, but this still is a busy time for most farmers. It is the season for planning, when you decide what crops to plant, and what methods to follow the coming season.

Here's a friendly suggestion: Be sure to include soil testing in those plans. The time necessary to take soil samples and have them tested are about the best investment any farmer can make.

Many farmers have their soil tested. Being a reader of Farmer's Digest, you probably are one of them. They know exactly how much fertilizer to add for most efficient production of the crops they grow. But many farmers still fertilize by rule of thumb or by habit. Some may apply the kind and amount of fertilizer their land needs. But many others miss the mark, apply too little, too much, or the wrong kind.

Soil testing will pay big dividends. The grower who applies too little fertilizer, the commonest error of all, is missing an opportunity to get a big increase in yields. The grower who applies the wrong kind or too much fertilizer is wasting money or even damaging his crop.

Soil testing will remove all doubt. If you don't now test your soil, talk to your County Agent or Vo-Ag Instructor. They will help you.

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LAMME FARMS
Laclede (94), Missouri

The Farmer's Digest

Volume 24 January, 1961 Number 7

What's Ahead For '61

The price for hogs looks good, beef and poultry prices are expected to go down, and the dairy situation hinges on several factors. This article gives full details on pricing and costs that are expected . . .

Condensed from Farm Journal

Claude W. Gifford, Economics Editor

YOUR prospects for making money in 1961 probably won't change much from this year.

Some commodities and some farmers will have it easier, and some will find it tougher. But, over-all, national farm income in 1961 is expected to run about like it did this year.

That's the way USDA economists see it as of now.

As farm people close the books on 1960 they'll total up about $20.6 billion net income from all sources. It was $20.4 billion last year.

Realized net income from farming alone in 1960 will come to $11.3 billion—the same as last year.

Because fewer farmers will be cutting up the income pie this year, families will average slightly higher incomes than a year ago. This won't be true of every family, but it's the over-all picture (see table for average net income per farm unit).

The year turned out somewhat better than forecasters expected earlier. A year ago, USDA economists were predicting a 1960 drop in realized net income from farming alone of about $800 million. But the 3% increase in vol-

Reprinted by permission from Farm Journal, Philadelphia 5, Pennsylvania

ume offset the 2% drop in average farm prices, as farm production expenses held about even.

What fooled the experts?

● Hogs, for one thing, which have had a better year than predicted last fall. Just at this time a year ago, hog raisers suddenly dumped a large number of sows on the market and cut back sharply on their spring pig crop.

● High, over-all crop production, especially in wheat and corn. Farm output will set an all-time record in 1960—up about 3% from last year, and 30% above the 1947-49 average.

● Record exports that rang up a $4.5-billion total in the fiscal year ending last June 30, and which promise to go even higher in the current year.

● A better year for vegetables than expected—12% more gross cash in the first nine months of 1960 than in the same period last year.

● Dairy, eggs, broilers and tobacco also did better than in 1959.

As expected, beef cattle ran into trouble, in fact, lost more ground than any major commodity. Cash receipts for cattle and calves were off $458 million for the first nine months.

These crops showed less cash income than the year before: Cotton, barley, sorghum, flaxseed, onions and citrus.

How does 1961 look for farmers?

1. Demand will be good, government economists predict. Consumers in the U. S. have some 5% more income to spend this year. High industrial production and turn-over in the economy is the best floor possible under farming.

Exports s h o u l d hold fairly steady. (They account for at least 10% of farmers' cash receipts.)

2. We'll have still more to sell in 1961—unless weather or stricter government production controls intervene.

3. Prices on most crops should continue fairly stable. Beef cattle and poultry probably will be the most important exception as prices drop due to heavier numbers.

When the temperature reaches 95 degrees, hens consume twice as much water as they do at 65 degrees.

Under present law, price supports on most major products will hold at about present levels—or go up if there's a change in government philosophy.

4. What happens to farm costs depends on how we contain in-

flation. Taxes probably will go up some.

What this adds up to is not much change one way or the other. That's been the story most of the time since 1954. Notice in the table the remarkably small difference in net income to farm people from all sources in six out of the last seven years.

Gross income from farming alone has climbed 11%, but production expenditures have climbed right with it.

Now for a look at 1961 prospects for these farm products:

Hogs

Supplies: Slaughter in the first half of 1961 will be smaller than in 1960, is likely to run higher the second half. Total pork supplies for '61 will exceed '60.

Price outlook: Prices for the first half of 1961 will be better than in the first half of '60, lower in the second half if that larger spring crop materializes. *Warning:* 1961 might be a bad hog year. A large increase in hog numbers would run smack into larger supplies of beef.

What to do: Don't jump into hogs now. Push for fast gains on your spring pigs, get them sold before prices lag. You should be able to make money on feeder pigs that get to market by June.

Beef Cattle

Supplies: Expect more slaughter than in 1960, especially in non-fed cattle. Beef supplies per person will go up four pounds from this year's record high of 85.8 pounds. Cattle numbers will hit a record high Jan. 1—up 3½ million from Jan. 1, 1960.

Price outlook: 1961 prices are expected to average $2 per cwt. below this year's levels (about the extent of the 1960 drop from '59 levels).

The lower grades of cattle will be hit hardest; and the downtrend is likely to be greatest in the last half of 1961.

Be prepared for rough sailing in 1962. If cattle numbers continue to climb and the next hog cycle peaks out in '62, meat supplies will hit a new high. In 1956 when meat supplies were at 166.7 pounds per person, cattle averaged $14.90 for the year and hogs averaged $14.40.

Farm records can point the way to profits.

What to do: Hustle fed cattle along to get them on early markets in 1961.

Dairy

Supplies: Supplies of milk products will hit a new record high in 1961—but the production per person will be a record low of less than 700 pounds.

Price outlook: Dairymen will collect a record amount of gross

cash in 1961. Prices will average higher than a year ago through March. What happens then will be influenced by the new level of price supports we get April 1.

What to do: Cull out cows that won't pay their way at lower milk prices. Buy up feed supplies now.

Poultry and Eggs

Supplies are headed up, due to higher prices in 1960. You can expect more eggs in the last half of 1961. Since Sept. 1, 15% more broilers have been hatched, and pullet chicks sold for broiler breeder flocks have increased 26% in the last five months.

The turkey hatch is up about 30% from a year ago.

Price outlook: Through the first quarter, eggs should be higher than in 1960. After that, the prospect of bigger supplies will begin to drag down prices. Turkey prices are likely to run noticeably lower throughout '61.

What to do: Get laying chicks early to get more eggs on the market before prices reach their low point. Run fewer broilers through the first part of '61. Ease off on heavy turkeys.

INCOME OF FARM PEOPLE FROM ALL SOURCES (in billions)

Year	Gross income from farming	Farm production expenditures	Net income from farming	Average net per farm unit (dollars)
1954	$34.4	$21.7	$12.7	$3,893
1955	33.6	21.9	11.8	3,893
1956	34.2	22.6	11.6	4,037
1957	35.2	23.4	11.8	4,089
1958	39.3	25.2	14.0	4,676
1959	38.0	26.2	11.8	4,396
*1960	38.1	26.2	11.9	4,578

*Farm Journal estimates based on 4.5-million farms under the old census definition.

Night Lights For Pigs

Swine growers are borrowing an idea from poultry growers who have been putting lights in their poultry houses to encourage chickens to stay awake longer and eat more. All-night lights over hog feeding and watering areas can pay good dividends. Especially during hot summer weather, hogs eat and drink more under lights during the cool night hours. There is less crowding and less likelihood of the animals injuring one another. Extension specialists point out that hogs have comparatively small stomachs and need to eat and drink more frequently than other livestock. —*Louisiana Farm and Home News*

Yardstick For Dairy Management

Dairy research men announce an index to measure effects of feeding, milking, and management on production . . .

Condensed from Wisconsin Agriculturist

● AN extra pound of nutrient per day in a dairy cow's feed adds about 12 pounds of butterfat to her yearly record.

● Each month between calving periods increases a cow's production by about 20 pounds of fat for the milking year. Each week in the previous dry period boosts fat production by almost 2 pounds for the year.

● Given a 4 point range (from poor to excellent) for feeding practices, you can boost your herd's average production by around 25 pounds of fat per year each step you go up.

● Improve your milking practices by 1 point (assuming there are 4 steps between poor and excellent) and you step up the fat per cow per year by 33 pounds.

● The mature equivalence standards now used in sire testing do a good job in adjusting age differences among milking cows and heifers.

These are the things University of Wisconsin dairy research men have found after analyzing more than a thousand Dairy Herd Improvement Association records in 43 Wisconsin Holstein herds.

They're trying to take the guesswork out of selecting high producing Holsteins for breeding work. They want to pin down the effects of environment on milk production—the amount and quality of feed, size of herd, animal's age, length of dry period, length of calving interval and other such management factors.

Figures Show Strong Trend

The figures in this form aren't final yet, says the Wisconsin research team of E. L. Corley, E. E. Heizer, C. E. Kraemer, A. G. Sendelbach, E. E. Starkey and C. E. Nichols. The exact figures may change somewhat as they run more herd records through the University's electronic calculating machines. But they certainly point to a strong trend.

The main purpose behind the

Reprinted by permission from Wisconsin Agriculturist, Racine, Wisconsin

research, which will cover several years, is to get more exact "correction factors." By adding or subtracting the correction factor figures you can get a more accurate measure of the true breeding worth of cows of different ages, and under different management. Cows in different herds could be compared. This could take much of the guesswork out of proving bulls by the records of their daughters.

When you're out looking for a cow or bull for breeding, you'd like to know their true inherited capacity for production. We already have figures to standardize records to twice daily, 305-day milking at a mature equivalent production. Every dairyman knows a well fed cow gives more milk than one poorly fed. But we have never been able to translate this to an exact figure. We didn't know how much to add or subtract to compare one cow's inherited capacity with another. We haven't had a measuring stick to take into account these factors, such as feeding or care that influence production.

Can Level Out Differences

If all records were made in the same herd, under the same feeding and care, then you could compare accurately the record of one cow with another. Denmark has turned to such a method for testing its bulls. Similar set-ups are underway in this country. But then the number of daughters you can test in such controlled herds are limited. And this in turn limits the number of bulls that can be tested.

Once the Wisconsin research team comes up with the figures, it'll be fairly simple to level out most of the environmental differences between cows in different herds. By subtracting and adding the right figure we'll be able to come out with fairly near the cow's true inherited milk production capacity.

The research is designed primarily for getting more accurate sire indexes on the production of their daughters and getting comparable figures for inherited production in different herds. But they also have real meaning to practical dairymen.

A land economist and market analyst predicts that high peaks and sharp drops in urban land values are a thing of the past, due to the Nation's growing economy and its many Legislative safe-guards. Farm Facts

1. If you're underfeeding your cows by only 1 pound of total digestible nutrients daily you're losing around 12 pounds of fat per cow per year on the average. That means if you have a 20-cow

herd you're losing 240 pounds of fat each year.

Feed each cow according to her production. That way you'll cash in on her inherited production.

2. How you feed is more important than how much you feed within reason. Cows in herds with excellent feeding practices can be expected to produce some 75 pounds more fat during the year on the average than if you use poor feeding practices. For a 20-cow herd that's 1,500 pounds of extra fat per year.

This doesn't add much to your cost. It's mostly a matter of feeding regularly and having feed available to the entire herd—heifers and dry cows as well as the milkers.

3. The difference between poor and excellent milking practices should give you around 100 pounds fat per cow boost per year. This amounts to 2,000 pounds in a 20-cow herd.

It's a matter of paying strict attention to line vacuum, milking machine time, udder stimulation, sanitation and mastitis control.

4. A 13-month interval between calves will step up the fat production on the average by around 60 pounds over a cow with a 10-month calving interval.

Don't look on days of the dry period as a total milk production loss. Cows getting 8 weeks rest will average around 10 pounds more fat during the next milking year than those that have only a 3 weeks dry period. Taken together these two will give you 1,500 pounds more fat per year in a 20-cow herd.

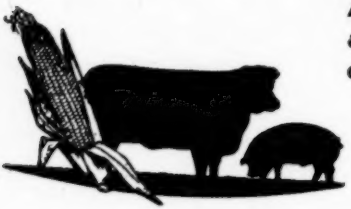
Cattle In '61

Cattle slaughter will increase further in 1961, supply possibly 4 lbs. more beef per person than in 1960, says USDA. The department expects cattle prices to average below 1960 which averaged $2 per cwt. below 1959. USDA says the size of cattle herds means that beef production and consumption the next few years will set new records.

Food In '61

Food supplies will be enough larger next year to about match the increase in population. Consumer demand for food is expected to continue strong during the next year because the flow of income to consumers will remain at high levels. Consumption of food per person is expected to be about the same as this year. Average retail food prices also will be about the same.

It Pays To Study Cattle Cycles



Authorities say past experiences can answer questions about the future of the cattle business . . .

Condensed from
Western Livestock Journal

W. Y. Fowler,
New Mexico Extension Economist

THE cattle cycle is the most interesting of all production cycles. Too, it is the one cycle of most importance to all farmers and ranchers in the United States.

Each cattle cycle is different—and each "up and down" of each cattle cycle varies in length and importance.

But observations on "a" cattle cycle are useful in demonstrating effects of several important principles:

. . . There is an important time lag between increased prices and an increased calf crop.

. . . The "supply" deficit which brought the improvement in price is further aggravated by attempts to increase supply. Retention of heifers for expansion further reduces supply and increases price.

. . . The resulting "over-supply" in the calf crop is magnified by two actions:

(1) Selling heifers that would have been retained during the expansion period.

(2) Further selling of heifers and cows to decrease cattle production.

Results

The net results of these are that we have:

(1) A cyclical result that takes quite a few years.

(2) A "normal" tendency to over-expansion during the expansion period and over-reduction during the cut-back period.

Now let's look at what has actually happened to the cattle business over a period of time as a result of these cycles.

Cattle Cycles: Price and Supply

(First figure, Peaks in Real price; second, Peaks in Numbers; third, Lag).

1899	1903	4 years
1915	1920	5 years
1929	1934	5 years
1940	1944	5 years
1952	1956	4 years

Expansion of cow numbers gen-

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Western Livestock Journal, 4511 Produce Plaza, Los Angeles 58, California

erally is for seven years, liquidation for about the same. Increase in price is for five to six years, decline in price for eight years.

(First, figure, Price % of Normal; second, Supply % of Normal).

Peak	133	122
Low	76	80

The 1952-53 collapse in prices is unequalled in history. It was a first-year decline of 20%. Previously it had taken four years for the price to break that much. The 2-year drop in cattle numbers in the current cattle cycle is the shortest on record.

Anticipated Peak

A peak in numbers in the present cycle is expected sometime around 1963. A low estimate is for 110 million cattle and calves. This would yield an average per capita consumption for beef of 90 lb. per person. This is 4½ lb. more than the 1956 record.

A higher estimate calls for 115 million head. This more rapid rate would lift consumption to 94½ lb. per person. Indications to date are that, when beef consumption goes over 80 lb., considerably lower prices are required to move the product into consumption. Thus a figure in the 90s would unquestionably result in a demoralized market for cattle.

There also are some interesting sidelights on the present cycle which the rancher should bear in mind as he makes his decisions this fall.

Slaughter cattle prices have been declining since April of this year. The price decline is a result of both the normal fall in prices at this time of year and the increased number of cattle on feed. The prices of slaughter cattle are averaging about $2 to $3 below those of a year ago (October, 1960).

Grade Spread

The price spread between grades of slaughter cattle has increased. The price spread between prime and choice is about $3 to $3.25 compared with $2.50 to $3 spread a year ago. The spread between choice and good is about $2 whereas a year ago it was around $1.40. The spread between good and standard has increased more than the higher grades and is from $3 to $3.50, while a year ago it ranged from $1.80 to $2.20. Whenever the number of cattle increases, the spread between slaughter grades widens. We are in the stage of the cattle cycle when cow numbers are increasing so it is expected prices between grades will wid-

An Oregon study indicates that iodine prevents enlargement of thyroid glands and "water on the brain" in calves.

en and they should continue to do so.

Chances are fairly good for slaughter cattle markets to strengthen somewhat during the summer and fall. If this happens, it will give firmness to the feeder cattle market, too.

Later Declines

But later in the year, seasonal and cyclical weaknesses are likely to dominate the cattle business. The best prices of the current cycle are probably already past and the best prices in 1960 are close at hand (written in October, 1960).

Prospects suggest that earlier and heavier culling of cows would pay this year. A 1,000-lb. cow loses $10 in value every time the price drops a dollar and cow prices are several dollars above lows of the past cycle. Early marketing could discourage importing of beef and would relieve supply pressures later in the year.

Quite likely, any and all cattle marketing arrangements negotiated before October this past fall will be more favorable to producers than those negotiated later in the season. No sharp price breaks should come if producers are able to avoid abrupt changes in the amounts offered on the market.

Why Develop A Conservation Plan?

A conservation plan has the following advantages:

1. It provides an inventory on aerial photos of your soil, water and plant resources.

2. It serves as a blueprint for the most profitable use of your resources.

3. It is a guide for improving and maintaining a permanently productive soil.

4. It is a record of your decisions for applying needed conservation practice.

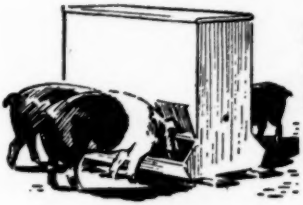
5. It combines your knowledge, experience and desires with the skill of technicians.

6. If effectively applied makes a better place to live.

If you don't have a Soil and Water Conservation Plan and your farm is in an established Conservation District, you probably can get one by phoning your Soil Conservationist. A plan with all the information it contains can be of great value to you.

—N.A.S.C.D. Newsletter

You May Be Sharing Your Profits



Here's a sound management program for growing-fattening swine from weaning to market . . .

Condensed from American Livestock Journal

SAVING the largest number of pigs per litter is only the first step on the road of greater hog profits.

Sound management techniques must be used all along the line until hogs are marketed to achieve efficient production and the highest net profits.

For many years, agricultural groups have issued management recommendations. Common to all was the lack of uniformity. The adoption of the uniform recommendations by the Nutrition Council of the American Feed Manufacturers Association is the result of an intensive study of all available research. These recommendations are based upon the carefully considered judgment of more than 100 authoritative sources, including the nation's Land Grant Colleges and Experiment Stations.

Their recommendations are as follows:

Feeding Management

1. The number of pigs per linear foot of self-feeder space or pigs per self-feeder hole should be:

	On Dry Lot	On Pasture
Weaning to 75 lbs.	4	4-5
76 lbs. to market	3	3-4

2. The percentage of self-feeder space given to protein supplement should be:

	On Dry Lot	On Pasture
Weaning to 75 lbs.	25%	20-25%
76 lbs. to 125 lbs. ...	20%	15-20%
126 lbs. to market	15%	10-15%

3. Three self-feeder holes, or three linear feet of mineral box space, should be allotted for 100 pigs when salt or a mineral mixture is fed free-choice.

Reprinted by permission from American Livestock Journal, Corsicana, Texas

4. For hand feeding in troughs, or for hand watering, the length of the trough per pig should be:
Weaning to 75 lbs. ..... .75 ft.
76 lbs. to 125 lbs. .....1.00 ft.
126 lbs. to market .....1.25 ft.

5. When pigs are confined from weaning to market, 15 sq. ft. of feeding floor space should be provided per pig if the pigs are fed from troughs and 10 sq. ft. of feeding floor space if fed from self-feeders. This is in addition to sleeping space.

6. One automatic watering cup should be provided each 20 pigs. (An automatic waterer with 2 openings should be considered 2 cups.)

7. The minimum capacity waterer for 10 pigs per day should be 25 gallons in the summer time and 15 gallons in the winter time.

Do dairy cows with high production "burn out" sooner than others? Not according to the USDA, which reports that high producers seem to "outlast" low producers.

8. The drinking water should not fall below a temperature of 35 to 40 degrees Fahrenheit during the winter.

General Management

9. The use of sanitary hog wallows during hot weather is recommended. Up to 50 pigs can be accommodated per 100 sq. ft. of wallow, provided shade or shelter is near-by.

10. The area of shelter provided should be:

	Summer Time (Shade or Housing)	Winter Time (Housing)
Weaning to 75 lbs.	7 sq. ft.	6 sq. ft.
76 lbs. to 125 lbs.	9 sq. ft.	8 sq. ft.
126 lbs. to market	12 sq. ft.	10 sq. ft.

11. Ringing of pigs is recommended where rooting becomes a problem.

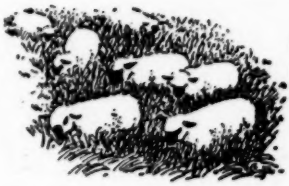
12. A program of strict sanitation to prevent infestation is recommended for control of round worms in swine. Where such a program is not effectively carried out, worming of pigs soon after weaning, and repeated later if needed, is recommended.

13. Effective mange and lice treatment is recommended at weaning and whenever needed thereafter.

14. On good legume-grass pasture allow 20 growing-fattening pigs per acre on a full feeding program and 10 to 15 per acre on a limited-feeding program.

15. Pigs of widely varying weights should not be run together. It is recommended that the range in weight should not exceed 20% above or below the average.

What's In Store For The Sheep and Wool Industry?



A program of greater efficiency must be planned . . .

Condensed from Pennsylvania Farmer

CAN the sheep industry increase in efficiency without increasing in size?

S. Kent Christensen, economist for the National Association of Food Chains, feels it must. He made this statement at the National Lamb and Wool Industry Conference at Laramie, Wyoming, in August, 1960.

"It is my opinion that we must map out a program that will result in greater efficiency despite the relatively small-scale operation. It is likewise my opinion, and that of numerous others, that the long run future of this industry lies in well-managed farm flocks — farm flocks that are small in relation to the large range bands that have been prevalent in the past," Mr. Christensen said.

The speaker gave two reasons why he thinks the range flocks will disappear: 1. Large range flocks usually require hired labor. It is becoming almost impossible to hire American laborers who are willing to sacrifice many of the niceties of our high standard of living to herd sheep by themselves on the open ranges and undergo the hardships of this way of life.

2. The demand for use of public lands for recreational purposes is putting more and more pressure upon the government to manage these lands for that use, at the same time reducing the use of such lands for grazing purposes. Some important reductions have already been made. Statistics from the U. S. Department of Agriculture show that in 1944, approximately 4.3 million head of sheep grazed on national forests. In 1957 this number had been cut almost in half—to 2.6 million head.

Next, Mr. Christensen feels that carcass quality of lambs must be improved. This, he feels, should begin with the elimination

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of faulty judging methods on fat lambs at stock shows and fairs. He says that ring standards are not correlated with the kinds of carcasses desired in the slaughter animal.

A study by P. E. Neale of New Mexico State University shows that lambs weaned at two to three months of age can be finished with hang-up carcasses equally as good as those weaned at five to six months of age. By weaning early and using controlled feeding, there is little doubt that the type of carcass desired by the consumer can be improved. This change would eliminate several other problems. It would allow producers to move lambs off pasture earlier, it would save labor and feed ordinarily needed to run the extra two or three months and it would eliminate large, oversized lambs which buyers discount at present.

One thing we have to be thankful for is that we don't get as much government as we pay for.

Marketing Problems

Because of the expense involved in picking up lambs in the country, Mr. Christensen feels it would be good to sponsor or encourage the selling of lambs through auctions or through special sales. However, many improvements need to be made in the handling of lambs at regular auctions, he said. This includes provisions for better sorting and grading and pooling to permit larger uniform lots.

On the marketing line, the American Sheep Producers Council feels that the meat people of the leading food companies have no trouble selling a milk-fat, desirable carcass quality lamb. They say that regardless of the effort put into promotion, lambs carrying a high degree of globby fat are difficult to sell.

Land, labor, machinery and equipment, and all farm and home improvements as well as cost-of-living items are high in cost. It takes a lot more money now for almost everything on the farm. The wise use of credit can mean the difference between success and failure to many farmers. Agricultural Extension agents and vocational agriculture instructors are ready to assist any farmer who has problems in this field.

If the prices of lamb or the consumption of lamb are to be increased in this country, lamb must be made available in a wider number of cities and a greater number of stores. A USDA sur-

vey indicated that only about one-third of the stores selling meats and foods in this country carry lamb.

High Milk Production Is Not An Accident

"High milk production is not an accident. It does not just happen," W. L. (Bill) Northern, Extension dairyman at West Virginia University, reminds dairymen.

"A dairyman has to earn it," Northern continued. "He must follow rigid culling, intelligent feeding, and a planned breeding program."

Northern outlined that record keeping is essential for high production. "There is no substitute for intelligent use of records and research findings. Therefore, the first step in herd improvement is enrollment in a production testing program. The Weigh-a-Day-a-Month, or Owner-Sampler, or Dairy Herd Improvement Association plan will aid a dairyman in developing a high-producing, profitable dairy herd. Your county agricultural agent or vocational agriculture instructor is available to help you determine which program meets your needs the best."

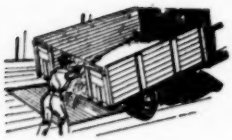
To emphasize how inefficient a poor-producing herd can be, Northern cited this point:

It would take 2½ times as much forage to produce 200,000 pounds of milk with 5,000-pound producers as it would with 14,000-pound producers. A herd of 40 cows, producing at the rate of 5,000 pounds, is needed to make 200,000 pounds per year, but only 14 cows, producing at the rate of 14,000 pounds yearly, would do the job. Depreciation, interest, repairs, taxes, insurance, and labor needed to maintain a herd of 40 cows will be much higher than for 14 cows.

"It is more profitable, and requires much less work, to breed good cows and to feed and manage them well than to work with cows that are not well-bred and which are underfed," Northern concluded.

—*West Virginia University*

Cost Of Owning And Operating Farm Trucks



How much does my truck cost to operate? Should I trade it in? Should I buy a used truck? This article will help answer some questions . . .

Condensed from Arkansas Farm Research

Daniel F. Capstick, University of Arkansas

FARM trucks are important items of farm expense.

Because of this a study of the cost of owning and operating trucks was begun in Arkansas in 1958.

Trucks used in the study were typically of the ½ and 1½ ton ratings. The larger trucks were all equipped with stake bodies. The sample survey included 30 of the smaller trucks and 31 of the larger trucks.

The small trucks were driven an average of about 20,000 miles annually. These trucks were normally traded every four years. The estimated length of ownership ranged from 1 through 10 years and the use ranged from 5,000 to 30,000 miles per year.

The large trucks were driven an average of about 6,000 miles annually. They were expected to last an average of 12 years. The estimated length of ownership ranged from 5 through 16 years and annual use ranged from 2,000 to 12,000 miles.

The total cost of owning, and operating a farm truck includes fixed and variable costs. Fixed cost includes depreciation, interest, taxes, license, and insurance. Shelter was not a typical cost item. Only 27 percent of the small and 19 percent of the large trucks were ever sheltered. Variable cost includes such items as repairs, maintenance, lubricants, and fuel.

Since 1944, the output of American dairies has steadily increased while the number of dairy cattle has steadily decreased.

Average fixed cost was $887 per year for the small trucks when they were traded annually. If the same trucks were driven for 10 years, average fixed cost would be as low as $383 per year. Fixed

Reprinted from Arkansas Farm Research, University of Arkansas, Fayetteville, Arkansas

Table 1. Average Cost of Owning and Operating ½ Ton Trucks*

Years of use	Miles of annual use		
	10,000	20,000	30,000
	Cents per mile		
1	11.4	7.5	6.1
2	10.8	7.1	6.1
3	9.8	6.8	6.0
4	9.5	6.8	—**
5	9.1	6.5	—
6	8.8	—**	—
7	8.5	—	—
8	8.3	—	—
9	8.2	—	—
10	7.9	—	—

*New cost estimated at $2,100.
**Cost was not computed beyond 100,000 miles of total use.

cost was somewhat higher for the large trucks because of a larger investment, or $1,223 per year when purchased new and driven only one year. With 16 years of use, fixed cost was $409 per year.

Average variable cost per mile generally increased as the miles the truck was driven increased.

The cost of operating small trucks was 6.8 cents per mile when they were driven either three or four years at the rate of 20,000 miles per year (Table 1). Estimated average cost decreased from 7.5 cents per mile for one year of use to 6.5 cents per mile for four years' use.

The average total cost per year trading annually would be $200 greater than trading every five years. By trading every five years rather than every three or four years the savings amounted to an average of $60 per year.

The large trucks cost 23.5 cents per mile when driven 12 years at the rate of 6,000 miles per year (Table 2). Average cost ranged from 38.0 cents down to 22.8 cents per mile for 1 and 16 years of ownership, respectively. By using the truck 16 years rather than 12, average cost could be 0.7 cent per mile less, or an average reduction in total cost of $42 per year over the life of the truck. Cost per mile did not always decrease with an additional year of use.

Table 2. Average Cost of Owning and Operating 1½ Ton Trucks*

Years of use	Miles of annual use		
	2,000	6,000	10,000
	Cents per mile		
1	68.6	38.0	16.7
2	59.8	33.8	15.0
3	52.1	29.9	15.4
4	48.7	31.9	14.3
5	45.0	29.4	14.6
6	42.3	27.5	13.7
7	39.9	26.0	13.7
8	38.1	26.9	13.1
9	36.8	25.7	13.4
10	35.0	24.6	13.1
11	34.4	24.0	—**
12	33.8	23.5	—
13	32.8	22.8	—
14	31.9	22.8	—
15	31.0	23.0	—
16	30.4	22.8	—

*New cost estimated at $2,850.
**Cost was not computed beyond 100,000 miles of total use.

The more miles a truck is driven

annually the less will be the reduction, if any, in average cost per mile for each additional year of use.

Sixty percent of the large trucks were purchased as used trucks by the farmers interviewed. The average age at the time of purchase was four years and the odometer reading was about 40,000 miles. These trucks were also driven an average of about 6,000 miles per year. The cost advantage of purchasing a new truck will depend on the purchase price and the cost of immediate repairs. For the trucks studied the average cost per mile was approximately half that of new trucks (Table 3). The cost advantage of buying a used truck averaged about 14 cents per mile.

Table 3. Cost Comparison of Owning and Operating a New and a Used 1½ Ton Truck Driven 6,000 Miles per Year*

Years of use	Average cost		Amount saved with used truck
	New truck	Used truck	
	Cents per mile		
1	38.0	23.3	14.7
2	33.8	17.2	16.6
3	29.9	14.8	15.1
4	31.9	15.4	16.5
5	29.4	14.5	14.9
6	27.5	13.6	13.9
7	26.0	13.4	12.6
8	26.9	13.6	13.3
9	25.7	13.4	12.3
10	24.6	12.8	11.8

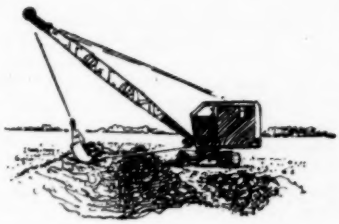
*Cost of the used truck based on a purchase price of $912.

The final decision of when to trade will depend on the age of the present truck, the miles driven, and its present condition. The more miles a truck is driven annually, the shorter is the replacement program that can be followed economically. However, the money cost may not always be the decisive factor when deciding to buy a new truck. The subjective value of driving a later model truck and the expected greater dependability may also be important. Also, the availability of investment capital should be considered. If capital can be employed more profitably in an alternative use it may be wise to postpone the purchase of a new truck.

Good farm management calls for a proper balance between making payments on long-term debts and laying up financial reserves in a safe and liquid form. With increased commercialization of farming and greatly increased operating costs, it is more than ever important that a farmer have an adequate liquid financial reserve.

Out of every dollar spent by the housewife for groceries, the farmer gets only 38 cents.

Better Farm Drainage Needed!



Good soil conservation, soil improvement, and proper farm drainage go hand-in-hand . . .

Condensed from Crops & Soils

D. R. Sisson, Purdue University

EXPERIENCE and research have taught farmers and scientists a great deal about improved drainage methods in the last 10 to 20 years. We are just beginning to apply this knowledge in developing better farm drainage.

Drainage problems are caused by one or more factors: (1) Periodic flooding of lands by overflow from streams or by tidal action in coastal areas; (2) overflow of low lying level lands from hillside runoff or sidehill seepage; (3) excess water in the soil from poor subsoil drainage; (4) accumulation of excess water in depressions; (5) high water tables from excess irrigation water or seepage from irrigation canals, or (6) a high water table from artesian water.

One of the more significant developments in farm drainage is that new information on soil characteristics is being used to determine drainage needs more accurately and to develop better methods.

In many states, soil scientists and agricultural engineers have been teamed together to prepare "drainage guides". These guides give for each soil type the drainage practice or combination of practices that will give the best drainage for crop production.

A few of the common soil characteristics and drainage problems are listed in the accompanying table.

There are three principal methods of field drainage: Tile, open ditch, and surface drainage. A good outlet is the foundation for any of these methods. If a good outlet is not available for gravity flow, pumping may be necessary.

If tile works well in your soil, tiling will be at least part of your

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GENERAL DRAINAGE GUIDE

TYPE OF DRAINAGE PROBLEM	RECOMMENDED DRAINAGE METHODS
Nearly level to gently sloping upland silt loam; adequate surface drainage; slow sub-soil drainage.	Tile drainage on level land; grass waterways or diversion ditches on sloping land; random tile lines.
Nearly level depressional areas on upland or old lake beds; silty clay loam; ponded surface water, perched water table, slow subsoil drainage.	Random shallow surface ditches to remove ponded water; tile drainage to remove soil water.
Nearly level to gently sloping upland soils; silt loam to clay with silt- or claypans; very slow subsoil drainage.	Surface drainage systems with land smoothing; use cross slope drainage terraces on more sloping land; tiling will seldom pay on these soils.
Depressional and upland sand and sandy loam soils with high water table.	Open ditches to drain surface water and control water table; care needed to prevent over-drainage; use filters with tile to prevent clogging.
Nearly level to depressional bottomland; silt loam to fine sandy loam; overflow from upland runoff, ponded floodwater, slow subsoil drainage.	Diversion ditches to cut off upland runoff; shallow surface ditches to remove ponded surface water; tiling usually possible to drain the subsoil.
Deep muck and peat; high water table and poor outlets; overflow from uplands may also be a problem.	Open ditches for initial drainage, diversions to cut off upland runoff; pumping may be needed; tiling possible after initial settling of muck; careful control of drainage essential.
Shallow muck soil over sand, marl or clay; high water table; poor outlets; overflow from upland runoff.	Poor cropland soils; tiling not possible; use low cost surface drainage and diversion ditches; use low cost dams to control water table.

answer. However, tile drainage should not be used as a cure-all solution.

There are few situations where tile drainage alone is the complete answer and there are situations where tiling should not be used. Remember, the main purpose of tile drainage is to control the water table and provide aeration of the soil by draining excess moisture from within the soil, and deliver it to an outlet ditch.

Relatively deep (3 to 5 feet) open ditch channels not crossable by farm machinery may be used for both surface and soil drainage. Because these drains take valuable land, are an inconvenience to farming and require considerable maintenance, they usually are not used for field drainage except in certain unstable soils where tile drains are too

great a risk.

Surface drainage, often combined with land leveling or smoothing, is catching on fast and is another important development in farm drainage. More emphasis should be and is being placed on surface drainage of slowly permeable soils, either to supplement tiling, or alone where tiling cannot be used profitably because of tight sub-soils or lack of a suitable outlet.

Surface drainage is the removal of water that collects in small and large depressions on the land surface. It is usually accomplished by some combination of shallow ditches, land smoothing, and land grading, shaping or forming. These ditches are relatively shallow and are usually crossable with farm machinery.

The general types of surface-drainage systems are: Parallel ditch, bedding, random ditch and cross-slope ditch (drainage-type terraces).

The parallel-ditch system is suitable for flat, poorly-drained soils with numerous depressions. The parallel ditches have wide spacing between ditches which fits well with the use of large farm machinery.

The bedding system is one of the older surface-drainage systems, but it is less convenient to farm with modern machinery and usually will not give as complete drainage as the parallel-ditch system.

The random-ditch system is adapted to slowly-permeable soils with pockets or depression too deep or large to fill by smoothing or shaping. The random ditch meanders from one low spot to another so that water flows toward an outlet ditch.

The cross-slope ditch system resembles terracing. The drainage ditches follow around the slope on a uniform grade according to the lay of the land. This system is for both drainage and erosion control on sloping wet fields (4 percent or less) where internal drainage is poor from the plow sole downward and where many shallow pockets hold water after rains. Crop rows may run in any direction, but best drainage will result if rows run in direction of greatest slope.

A 992,000-carat stockpile of diamonds is in the U.S. Department of Agriculture's storage bins, acquired by bartering surplus farm crops for strategic materials.

Each of the surface-drainage systems, except the random-ditch system, require collection or interception ditches to carry runoff outlet ditches.

Land smoothing will increase

the effectiveness of all surface-drainage systems and is almost a necessity in many cases. The smoothing not only increases the effectiveness of drainage but it makes all tillage, planting, cultivating and harvesting operations more efficient. Land smoothing provides a uniform surface that drains easily, if there is some natural slope. If the land is absolutely flat, then a greater amount of earth moving is required to provide some grade. This practice will fit in well with minimum-tillage farming.

Land smoothing has been widely used for many years on irrigated land in the Western States and can be used to provide a system for both drainage and irrigation.

Another new practice in drainage is the use of a fiberglass filter to cover tile lines and prevent clogging in fine sandy or silty soils.

A plastic-lined mole drain is another new idea being widely tested with some success. The cost is only about 10 cents a foot and it is expected that the plastic lining will give the mole drains much longer life than they have without it.

At this time, however, good quality clay or concrete drain tile is still the best bet for subsurface drainage. A recent research finding is that tile lines can be joined at 90-degree angles without slowing the water flow.

How can you tell when additional drainage or a new drainage system will be profitable for you? The investment will be sound if your annual benefits are greater than the total annual costs. Most of the benefits from improved drainage will come from higher yields and more efficient farming.

Other factors in favor of drainage are: Large yield increases possible, neighbors have had good results, high frequency of crop loss from poor drainage, money is available at favorable interest rates, you are using a high-level system of farm management, and improved drainage will make farming easier and improve the looks of the farm.

Beef calves born in January or February should weigh 500 pounds or more by Oct. 1, according to Purdue University animal scientists.

In planning your drainage system it is usually best to consult with an experienced drainage engineer or such local agencies as the extension service or soil conservation district. The engineering survey should be adequate for complete design of the system. Once the system is properly planned, then hire a reputable contractor with adequate equipment

for your job.

Finally, maintenance of the drainage systems is essential, especially in the first year or two. The life of many drainage systems is cut in half by failure to attend to a seemingly minor item like replacing a broken tile or cleaning out sand bars in open ditches.

Surface-drainage systems, in particular, require careful maintenance for proper functioning. Ditches should be inspected periodically or after each heavy rain and obstructions removed.

A good soil conservation program and other soil-improving practices are required to obtain best efficiency from any drainage system. There still is no substitute for deep-rooted legumes to improve soil structure and drainage.

In closing, it should be mentioned that it is best not to attempt drainage of land with questionable agricultural value. Wetlands are valuable resources too, since they conserve water and provide badly-needed wildlife habitats.

America's Valuable Asset

The productivity of American agriculture has been the decisive factor so far in preventing the Cold War from flaring into a shooting war. That theory is advanced, and supported rather logically, by Dr. J. Norman Efferson, dean of the Louisiana State University College of Agriculture.

Because of advances in farming science, about 10 per cent of the American people, working on farms, are able to supply the other 90 per cent with the best diet ever enjoyed by any large nation. The technological advances that have made this possible have thereby freed a vast army of workers for expansion of business, industry and the professions—and for military service if necessary.

In Russia, on the other hand, more than two thirds of the population must live and work on farms to feed themselves and the other third. This has cancelled out much of Russia's apparent manpower superiority so far as expansion of business and industry and other activities is concerned. A great war, making it necessary to call millions of people from agriculture, might produce food shortages and even famine in Russia.

From any point of view a productive and progressive agriculture is one of American's most valuable assets.

—Louisiana State University

New For You

BY THE EDITORS

POWER TO PRODUCE, the 1960 Yearbook of Agriculture published by the U. S. Department of Agriculture, is worth your time to read.

In layman's language, this book tells of the dramatic change from horse-drawn operations to the marvels of pushbutton automation. Topics in its 60 chapters and 480 pages (96 pages of photographs) include the development of tractors, electricity, communications, power on the land, harvesting methods, developments in handling livestock, mechanization of marketing, farm buildings, efficiency of labor, the effects of power, and power in the future.

To reminesce on a cold winter evening or to study the progress being made, you will enjoy this book. The Agriculture Yearbooks are published each year under a Congressional appropriation. Distribution is mainly through members of Congress. Drop your Congressman a line or copies can be bought at $2.25 each from the Superintendent of Documents, Washington 25, D. C.

★ ★ ★

A new line of galvanized steel, rectangular hog feeders with troughs guaranteed for 15 years has been developed by the James Mfg. Co., Fort Atkinson, Wis. Inverted V-shaped hopper bottoms provide adjustable feed flow, while agitators minimize feed lodging. The James Mfg. Co. will be glad to send you descriptive literature.

★ ★ ★

Here's something new and useful! A new high-capacity mobile loader which completely automates the loading of ground or flat-stored grain is now manufactured by Industrial Machinery Company, Inc., 2400 South Main Street, Fort Worth, Texas.

Design of the new loader incorporates the firm's standard screw conveyors into a fully automatic, one-step loading apparatus which can actually reach out and pick up the grain by itself. The loader has a capacity of more than 10,000 bushels or 12,500 cubic feet per hour. It can be mounted on any row crop tractor with a three-point hitch. They say it is capable of picking up any grain, seed, or other free-flowing material and depositing it into trucks, onto conveyor belts, or onto any other transfer media.

★ ★ ★

Winter is the time for farm welding repairs and construction. Basic information on metallic arc

welding electrodes particularly suited for farm use is contained in Lincoln Electric Company's WC-17 wall chart on "Farm Welding Electrodes". In addition to listing basic AWS classification and identification markings welding procedures for each electrode type are described. The chart also catalogs farm equipment by type of material used in common parts and presents tips on material identification.

The Lincoln Electric Co. will mail the chart directly to any farmer requesting it if you write to Jean J. Revelt, Public Relations Department, The Lincoln Electric Company, Cleveland 17, Ohio.

★ ★ ★

A new spray-on dry lubricant that provides ultra-slick surfaces without staining, running, or picking up dirt is being introduced by Du Pont.

Called "Slipspray", it eliminates the mess that often accompanies oil, silicone, and graphite lubricants. Instead of leaving drips, stains, blotches, or sticky spots, it forms a sleek, solid coating that transfers from the sprayed surface to any other material that rubs against it, yet remains dry, clean, and colorless.

It makes such items as drawers, doors, windows, screens, and zippers slide easily and also keeps them from jamming and sticking while not in use. In addition, it serves as a corrosion retardant for battery terminals, stored tools, guns, skates, and other metal material.

The slippery film provided by the spray lubricant helps to keep grass, dirt, snow, and mud from sticking to garden tools and other equipment. It is not only insoluble in water, but will neither freeze or melt. Normally, it will last several months.

For more information write to Product Information Service, E. I. Du Pont De Nemours & Company, Wilmington, Delaware.

★ ★ ★

Now a farm wife can keep in touch with her husband in every part of the farm without installing expensive car-type radios in tractors, trucks, and barns.

The solution is a two-way Citizens Band Radio. It is simple to operate, extremely economical, and involves no skill other than the ability to press a button and pick up a microphone. The farmer can install Citizens Band Radio sets everywhere — in tractors, combines, trucks, sheds, and the farm-house.

Citizens Band is the first means of communication available to farmers that is as inexpensive as a good home radio. The government will now issue a license to operate a Citizens Band Radio without any test.

To get a free copy of an information brochure on Citizens Band two-way radio, write to: Popular Electronics, Electronics World, Box 206, Village Station, New York 14, New York.

When writing to manufacturers, please mention you saw their product mentioned in the Farmer's Digest "What's New For The Farm" page.

— — THE EDITORS

Winter Hog Management

Three factors—shelter, water and feed—aid efficient production of market hogs during winter months. Dick Hollandbeck, Purdue University swine specialist, says each factor must be given consideration if hogs are to make the greatest gains during cold weather.

It is neither necessary nor recommended that hogs be kept in a tightly closed building. They will stay healthier and freer of respiratory diseases if provided dry and draft-free sleeping quarters where there is ample bedding. Ground corn cobs make suitable bedding for shoats.

Even during the coldest period of winter, water is an important part of the hog's ration. Hogs will drink about two pounds of water for each pound of feed eaten, Hollandbeck explains. Clean, fresh water which will not freeze can be provided with automatic fountains or other types of waterers.

Pigs weighing less than 100 pounds and not on pasture, as is the case in the winter, should receive 16 percent total protein in their ration. The protein content can be reduced to 14 percent for hogs over 100 pounds. Hollandbeck adds that hogs should have access to a self-feeder or box containing salt and a mineral mixture at all times.

—Purdue University

Sheep are probably the most sensitive of all the classes of livestock to insects and parasites. Chemical ontrols are available for such parasites as fleeceworms, head grubs, lice, scabies, screw worms, sheep ticks (ked) and ear ticks.

A "one-purpose germ killer" doesn't exist, says Dr. I. A. Schipper, North Dakota Agricultural College associate veterinarian. The farmer has to make his choice from a wide array of disinfectants for a specific job. For example, in disinfecting farrowing pens after an outbreak of disease, the alkali disinfectants are recommended. If a castration knife is to be disinfected, a quaternary ammonium salt preparation or lysol is recommended.

Plan Your Spending, Saving, Borrowing

Money management is an important part of your farm business . . .

Condensed from Successful Farming

A. G. Mueller and *Harold Guither*,
University of Illinois

IN JUNE of 1960 we visited a northern Illinois couple with a typical problem: When they completed their 1959 income tax return in April, the figures showed that they made a nice profit for the year. But their bank balance didn't even come close to the income their farm records showed they made.

Sound familiar? If you've been puzzled by "disappearing money," this may be the reason: Many farm families don't realize that their farm is both a producing and consuming unit.

- They usually keep fairly complete records of money they spend for the farm business. Income tax requires this.

- But they spend a lot of money for their home and family living expenses—with no records as to where it went.

What do you do about this situation? First, understand it. Here are some simple but important facts you should know.

- There are 3 ways to get a fatter bank account. They are:

1. Sales of farm products.
2. Borrowed money.
3. Money from other sources—such as gifts, past savings, and off-farm wages.

- Money leaves your bank account for 4 main purposes. These are:

1. To meet farm operating expenses.
2. To provide money for family living.
3. To repay debts and interest.
4. To provide savings or new investments for either farm or family use.

- You control the flow of money into and out of your bank account by your money management—supplemented with an accurate, complete set of farm and home

Reprinted by permission from Successful Farming, Des Moines 3, Iowa

records. These records show how all money is earned and spent.

Their value: These records will make it possible for you to regulate the amount of money flowing out into various uses. And each year's records will serve as a guide for setting up a budget and developing good spending habits to control money spent during the next year.

Money management plans. Mr. and Mrs. Dale McCallister of Vermilion County, Illinois, have worked out a solution to some problems that may be bothering you.

Dale signed up with the Farm Bureau Farm Management Service so he has complete farm business records. Mrs. McCallister signed up in an extension-sponsored home accounting project. She now has a record of every item they buy for the farm home. Similar services probably are available to you. (See your county agent or vocational agriculture teacher.)

To help in record keeping and controlling their spending, the McCallisters set up two bank accounts.

- One is used to take care of all the farm business transactions.
- The other provides the funds for all family items.

Each month they transfer a planned amount of money from the farm to the family bank account.

They write all their checks on printed and numbered checkbooks. They write no counter checks. "Too easy to forget them," Dale McCallister points out.

At the beginning of each year, this family looks at its past year's records to budget and plan their needs for the coming year. And they do this planning together as a family. They like this arrangement and plan to continue it.

A central Illinois farm owner-operator and his wife have worked out a different plan to control their spending. They have their farm paid for and can afford a fairly high standard of living. They worked out this arrangement:

There are many more doors to failure than there are shortcuts to success.

Each month they take $500 from the farm business account and set it aside for their family and living expenses. This is the total amount that the wife has to take care of all the living and household expenses. She can buy anything she wants within this amount.

Here's a guide: During 1958, a group of 114 record-keeping Illinois farm families spent $4,548 for family living expenses—an

average of $379 a month. Average gross incomes for these families was $17,781 and they received an additional $2,946 from off-farm wages, past savings, investments, gifts, and inheritances.

The $4,548 family living expense was divided this way: food, $848; operating and housing, $1,170; clothing and personal items, $472; automobile $503; medical expenses $405; and education, recreation, welfare, and gifts, $1,150. This may be a starting point for your budgeting until you have a year's records to guide you.

Money-management decisions. A northern Illinois dairy farmer and his wife faced a problem that often comes up. Should they buy a $2,800 bulk milk tank and put off some much-wanted improvements in their farm home?

This farmer and his wife talked over the problem and agreed that they should buy the bulk tank. They figured with the extra premium they would get for their milk they would pay for the tank in 4 years. And the saving in labor would permit them to expand their dairy herd.

After the tank was paid for, they would have extra income that would help make home improvements and provide for other things they wanted.

Another farm family faced the question: "How can we plan ahead for sending our children through college?"

They felt they had two choices:

1. They could try to build a bigger farm business while the children were young. Then they could pay the college expenses out of current earnings when the time came for the children to go to college.

2. Or they could regularly set aside a certain amount in government bonds to cash as needed for the college expenses.

They decided to compromise and do both. Some money was set aside for bonds. Some money was invested in building a larger farm business.

The first year of college turned out to be a year of average farm earnings. The college expenses came from the farm earnings. But last year hog prices dropped to $12.50 and money was a little short. Some bonds were cashed and the son continued with his college work.

Quiet people aren't the only ones who don't say much.

Credit tips. Most financial advisers to farmers would suggest that you limit your borrowing to productive uses.

However, if you must borrow to cover your living expense, a vice president of a central Illinois

bank serving farmers advises that you keep your living allowance as low as possible. And if credit is used for living purposes, your banker will insist that the expected income must be adequate to cover the loan.

For one young farm operator taking over a new farm his banker worked out a financing plan that required borrowing about $1,000 more than the expected cash income during the year ahead.

Total loan would add up to about $10,200. Income with normal yields and steady prices would produce about $9,200 gross income. However, a buildup in feed inventory was expected to provide for an increase in this farmer's net worth that would permit refinancing the extra $1,000. They included a living allowance of $160 a month in the loan budget.

For operators who do not have to borrow so much in relation to their expected income, a family living allowance may reasonably be set at $200 to $300 a month. The 114 Illinois farm families who kept records spent $379 a month in 1958. If the farm business does better than expected, the family can always take an extra "bonus" at the end of the year and use it for some special home and family use.

Most farmers get into money management trouble when they don't plan their use of credit.

Co-Ops Can Improve Farmers' Bargaining Power

"It has long been recognized that the individual farmer has little or no effective bargaining power. By associating himself cooperatively with other farmers, however, he advances his bargaining strength through collective bargaining. His control over farm prices is limited by the inability of voluntary cooperation to control production.

"It's possible that farmers could legally gain 100-percent control of a product through their cooperatives. But the methods used in gaining such control would be subject to judicial scrutiny. If, as a result of their acts, their prices are unduly enhanced, interstate commerce is unduly interfered with or competition is significantly reduced, action could be taken by the Federal Trade Commission or Department of Justice.

"But, between the position of little or no bargaining power and the latter extremes, is a broad area within which cooperatives may function legally in improving farmers' bargaining power."

—Frank Robotka, Prof. of Agricultural Economics,
Iowa State University

I Shall Cross My Cows With Charollais

An Englishman's appraisal of the Charollais breed. His opinions, we believe, are important to every U.S. beef breeder . . .

Condensed from Farmer & Stock-Breeder (England)

John Cherrington

(In England, where the Agricultural Ministry controls such things, the present question is whether French Charollais cattle can be imported for crossing with English dairy breeds. Many breeders are concerned about maintaining the purity of the dairy breeds. Others such as the author, would like to breed some cows with the unusual Charollais to produce better beef.)

I HAVE just been to a Charollais show at Moulins, in central France. Now there remains in my mind no doubt at all but that the Charollais should be tried here in England. I don't agree that its use should be restricted to dairy breeds, especially the Ayrshire. In fact I have grave doubts as to whether it will really nick in with the Ayrshire at all, but it almost certainly will with the Friesian.

But what would be more interesting would be to try the effect of crossing it with our traditional beef breeds, to give them more size and more flesh. Some of the best cattle I saw in the feed lots in the U.S.A. were Charollais x-Hereford. Charollais-Angus is another cross I heard warmly spoken of although I did not actually see them.

I shall certainly try to get some of my surplus cows inseminated with Charollais semen if the Minister (England's) gives the right decision.

The cows were all well made and wearing well in spite of their obvious age in many cases. And they had some extra-ordinary good calves on pastures that by our modern standards looked worn out and weedy.

The show I attended, organized by France's Departmental Agricultural Authorities and the local Agricultural Society, was in some ways like shows of live stock everywhere.

There were the rows and rows of super beasts, each being tended by an anxious herdsman with a brush and currycomb. It seems to be showing technique in

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Farmer & Stock-Breeder, Dorset House, Stamford Street, London S. E. 1, England

France that even during the judging someone is busy grooming the animal. Possibly to keep it quiet.

And just as at home I heard grumbling at the ringside at some of the decisions. French breeders are as keen as anyone.

The outstanding points of the Charollais are the buttocks and the depth of the shoulders, coupled with an ability to put on flesh and not fat. The rear end of a bull is a solid mass of flesh.

I did not see one with bad hind quarters, although by our standards they are high in the stifle. This exaggerated posterior is further accentuated by the deeply inset tail.

The backs are long, and there is a tendency to droop behind the shoulder. Some bulls, and they were mostly not among the prize-winners, showed this droop most clearly. Their owners told me that while they might be out of the running in competition, they and their progeny would weigh well.

The backs themselves were broad and firm, full of meat, and the shoulders extremely wide, with the blades pushed outwards by the mass of meat and muscle between the rib cage and the shoulder blade.

This fleshing inside the shoulder blade is another characteristic of the breed, and the French butcher cuts many steaks from there.

It seemed to me that there were two different types of Charollais. There was what one might call the traditional with heavy shoulders, slightly drooping back and a high pin bone and tail root. The other took after our own type of square, blocky beast, lighter in front with straight back and more of a wedge shape from the side view, possibly inherited from the Shorthorns imported 100 years before.

Firm Touch

All of them had in common this enormous backside and a very firm touch on even the oldest and heaviest cattle.

This breed just does not know how to put on superfluous fat.

By a coincidence a large cattle sale was being held close to the show, and I spent some time there talking to the farmer and looking at the stock they had to sell. I was again impressed by the quality of the cattle.

Machinery accounts for 34 per cent of fatal farm accidents.

They were uniform, and while obviously reflecting the different environments where they had been reared, displayed in full measure the buttocks, backs and shoulders that were emphasized in the show cattle.

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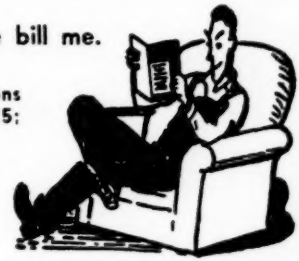

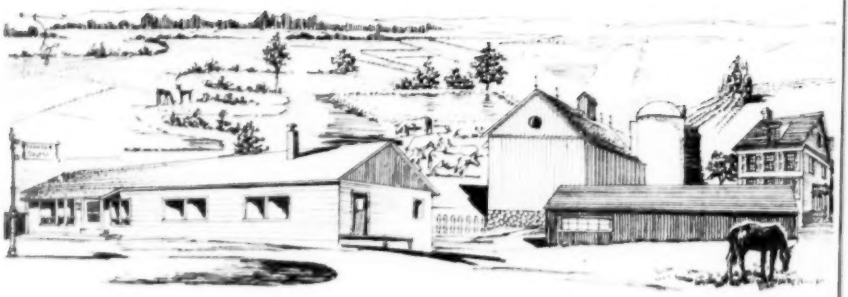

Here's a sketch of our farm where we publish Farmer's Digest. Our 200-acres are planted to corn, alfalfa, grass and trees. We farm — and we publish our magazine on a farm — because we believe that's the only way we can know what other farmers want to read. Farmer's Digest is probably the only farm magazine in the world published on the farm by farmers.

Top price at the sale of Charollais bulls at Moulins was $6,090 for a four-year-old. Young bulls sold to $2,520, few of quality making less than $1,120.

Conversation with the farmers discounted to some extent the exaggerated claims with which some of the Charollais advocates have been perhaps spoiling their case. Maturity is almost entirely a question of environment. Cattle fed well on improved pastures will grow and finish far faster than those on poorer surroundings. Cattle that are yarded will finish quicker still. It's all a matter of intake.

But this maturity comes at much higher weights than would be possible with our own beef breeds.

In the carcass competition run in conjunction with the show was an eighteen-month-old heifer, stall fed, that weighed 1,148 lbs. and killed at 706 lbs. Now many of our beef breed heifers killed at this weight would be definitely overfat with great clods of suet round the tail and so on.

This carcass was just nicely finished, with slight marbling in the meat.

The common age for finishing on grass was from 2½ to 3 years old, very old by our standards of today, and, of course, at much greater weights than are fashionable here. But it can't be too often emphasized that the Charollais does not put on much body fat, it puts on flesh. And it is flesh that the French housewife has been demanding for generations.

French butchers can't sell either bone or suet with their meat, and so it is all trimmed off before sale.

I was told that the great trouble with the Irish steers that were imported into France some years ago was the enormous quantity of suet that had to be trimmed off before sale.

Surely here we have an analogy with what is happening in our pig trade. For years we have been told that what is wanted is the lightweight pig, so that bacon and pork can be sold in individual joints. And now there is the heavy hog with its joints tailored by man. Might not this be the case with beef?

Family farms will get bigger rather than disappear because "farm mechanization is making it good business for farm families to operate larger farm."

Exports

A pointer to this is the export trade for Charollais. According to the figures given me at the show there has been a sale abroad in the first ten months of 1960 of over 700 beasts. This includes 200

to the Argentine, and other countries are the central American republics, Belgium, Germany, Pakistan and so on. A Russian delegation is expected shortly, and the problem of exports to England is the question of the moment. British interests have already been buying for export to some foreign countries.

To the logical French mind there seems to be no sense in our Government refusing entry permits once the disease question is satisfactorily settled. I agree. Disease is a technical question for veterinary surgeons.

Antibiotics In Milk

Antibiotics may be found in cow's milk after they have been treated for mastitis or numerous other infections with mammary infusion products, oral or injectable preparations.

Dr. Laverne C. Harold, Assistant Veterinary Medical Director, Food and Drug Administration, Washington, D.C., said the use of these products is necessary to protect the animal's health, but in the interests of the public health more information is needed on how long such preparations will be present in milk from a treated animal.

Reporting on Food and Drug Administration tests before the section on Public Health and Regulatory Veterinary Medicine at the 97th annual meeting of the American Veterinary Medical Association, Dr. Harold said tests were run on 7 penicillin preparations injected into the muscle tissue of cows.

Milking each animal twice a day, all treated cows showed penicillin contamination of their milk. Four of the preparations were undetectable 96 hours after injection while the remaining 3 samples were detectable up to 10¼ days after the final injection.

Dr. Harold said there is no need for public concern about penicillin in the milk they consume as long as dairymen withhold milk from treated cows for the period specified by their veterinarian.

—American Veterinary Medical Association

Have You Heard About Single X Corn?

You may want to compare single-cross corn with the standard double-cross hybrids you have been planting.

Condensed from Nebraska Farmer

John H. Lonnquist, Professor of Agronomy, Nebraska College of Agriculture

CAN you expect to increase your yield of corn by planting "single-cross" hybrids instead of "double-cross" or "standard" hybrid seed?

There's growing interest in this subject. Why this interest?

Farmers who have been producing hybrid seed or have seen the seed production fields of their neighbors have been attracted by the exceedingly uniform appearance, and in some cases the productivity, of single-crosses used as parents in these seed production fields. In a number of instances, single-cross hybrids have been included in regular corn performance trials in various states with excellent results. A few farmers in recent years have purchased single-cross hybrid seed, and the results obtained have created a demand for this type of seed. And now seed producers are beginning to offer limited quantities for sale.

Single-cross hybrids can make more efficient harvest possible. Because they mature more uniformly, the entire field of single-cross corn will ripen over a shorter period of time. Thus, there are not some plants ripening and subject to lodging or dropping ears while other plants in the field are still too green to harvest.

As a basis of comparison, similarity of plants from a single-cross could be likened to identical twins, while plants from a double-cross hybrid would show greater variation, such as individuals in a family.

This uniformity becomes important as more growers use improved harvesting equipment such as the picker-sheller.

So in the past few years there

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has been a trend toward an interest in and a demand for simpler hybrids. The standard "double-cross" hybrids are made up of four parent inbred lines. Three-way crosses use three parent lines, and "single-cross" hybrids are the result of a cross between two inbred lines.

As you go from a double-cross hybrid to a single-cross hybrid. there is a very noticeable trend toward greater uniformity. Every plant in a field planted to single-cross seed is genetically identical; thus ear placement, ear appearance, height of plant etc. are much more alike than where standard, more complex hybrids are used. The period over which a field planted to single-cross seed flowers or tassels will be considerably less also. If conditions are favorable, excellent yields may result.

In contrast the double-cross hybrid, being more complex, does not grow so uniformly and presents a greater range of plant types, including a longer flowering period than the single-cross hybrids.

The longer flowering period may be of considerable value in some years when particularly severe weather occurs during the critical flowering period. The more variable array of plants may offer a safeguard against variable weather and soil conditions.

With single-cross hybrids, however, where every plant is identical, conditions unfavorable to one plant in the field will be unfavorable to all. But if with proper cultural practices (water, fertilizer, etc.) the farmer provides the necessary ideal environment, the results may be distinctly better.

Variability may be more important in some areas than in others. The uniformity we have in other crops, however, (sorghum, wheat, oats, soybeans) has not been particularly disadvantageous, generally, and it may not be with corn.

Farmers use one-half as much steel annually as the automobile industry.

Actually it is possible to find higher yielding single-crosses than double-cross hybrids. This is simply because it is easier to find two inbred lines that combine well together than it is to find three or four. There is a basic genetic reason for this situation and one might be tempted to ask the question "why then haven't we had single-cross hybrids produced in quantity before?"

Actually the reason has been and still is one of economics. Single-cross hybrid seed is more expensive. There are two reasons for this. First, single-cross seed is pro-

duced using two inbred lines as parents. These rather weak lines result in low seed yields.

Second, even if a reasonably good yield of seed were obtained, the grading process would result in excessive grade-outs if kernels of the size and shape required by modern planters are to be available for planting. If corn growers demand single-cross hybrid seed in the immediate future they may have to become accustomed to a reduction in quality of the seed they plant over that commonly available now. With the right choice of parent lines and large scale production practices, the production of single-cross hybrid seed may result in a product that even though somewhat higher in price than standard hybrid seed would produce sufficiently increased yields to more than offset its higher cost.

Scientists are whipping the problem for the moment, however, by producing what are mechanically double-cross hybrids but genetically are single-crosses. In uniformity and productivity they would be difficult to distinguish from ordinary single-crosses. This is accomplished by crossing two closely related inbreds (sister lines) first, to produce one of the parents of the ultimate hybrid. A second set of two other related lines are crossed to produce the second parent.

The two related line crosses are vigorous enough to provide the seed producer with a reasonably good yield of good quality seed. In this way the seed costs to the corn grower need not be greatly different than they are at present. The seed characteristics could be comparable also. The resulting hybrid will retain the desired uniformity and higher yield potential of common superior single-crosses.

Until we have gained more experience with single-cross hybrids, it would be advisable to go slow in adopting them for extensive use. Those growers who can irrigate are in a better position to make a comparison between performance of the single crosses and the standard hybrids now being used.

Animals of the ruminant order (cows, camels, sheep, goats, deer, giraffes,) get up hind feet first; other large 4-footed animals rise front feet first.

Any advantages from planting single-cross hybrid seed will no doubt be realized under dryland conditions also in most years. But it would seem wise to proceed with caution until more experience is gained.

You need to be sure any single-cross hybrid you might be think-

ing of planting has been tested for adaptation and productivity in your area before you buy the seed. While some crosses are superior to standard hybrids, some are poorer also.

The grower is interested only in those that are superior and for which seed is available at a reasonable price.

Virus Causes Spread Of Warts on Cattle

Common warts on cattle are caused by a virus and are spread from infected to wart-free cattle, but not to man or other animals, notes Borden Ells, New Mexico dairy specialist.

As a rule, calves and yearlings are more susceptible to warts than older cattle. Many small warts or a few large ones may weaken young cattle and actually slow down their growth. On young cattle, warts are apt to appear on the head, neck and shoulders while on cows they frequently occur on the udder and teats.

Warts usually disappear naturally without treatment as animals mature. If you wish to treat infected cattle, you can tie off warts, apply medications, or ask your veterinarian to vaccinate, Ells suggests.

Remove warts that have mall bases by tying sterile cotton thread tightly around the base of each.

Daily applications of glacial acetic acid or tincture of iodine may destroy small warts. Before applying acid, protect healthy skin around warts with vaseline or lard.

Apply castor oil daily to small warts on the udder.

Your veterinarian can vaccinate the seriously affected animals to remove warts and the healthy animals to prevent warts. Above all, practice a good sanitation program as it goes a long way in preventing and controlling all diseases, the specialist advises.

—*New Mexico State University*

Full Performance From Laying Flocks

A new guide to production as outlined by poultry experts . . .

Condensed from A New Guide To Full Performance From Laying Flocks

IN EVERYTHING we humans do, there is a "standard of performance" that separates the winners from the "also-rans." You've seen it many times yourself.

For example, champion distance runners now point for a mile in four minutes or less. Progressive Corn Belt farmers shoot for — and crib — an average of 100 bushels of corn per acre. And top-notch dairymen aim for a herd average of 13,000 lbs. milk per lactation or more.

Egg production, too, has its standard or full performance index. Whether or not poultrymen prosper in today's fast-changing egg business depends on how close they come to getting full bred-in performance from their birds. As one expert points out, "Progressive poultrymen know that how they rate with the best will determine their future."

Full layer performance depends, of course, upon something that is drummed at a poultryman from the time he starts his first chick: *efficiency!* But just talking "efficiency" solves no problems. It's the way to efficiency that is important. Which brings us to . .

The First - and Most Important - Step to Efficient Egg Production

"What's the most important management practice? *Set a goal!*" says an extension poultryman. Few businesses can get anywhere without a pretty definite idea of "where they're going."

For some time, college poultry specialists and egg industry leaders have been skirting the area of establishing a definite goal-setting program for egg producers. Recently, Hess & Clark made an industry-wide study to tie the loose ends together. They collected the opinions of breeders, college poultry specialists and successful egg producers. They checked Random Sample Tests, college demonstra-

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tion flocks, good commercial flocks and USDA averages. The result: a *Full Performance Index* for egg producers. Better known to the trade as "FPI," this program sets forth the following goals as a practical guide for laying flock performance:

- 250 eggs per hen housed
- a dozen eggs on 4½ or less pounds of feed
- at least 90% Grade AA or A eggs
- 90% laying house livability

Is this too high — Out of reach? Well, let's look behind the goals and see . . .

Who Says So!

A committee of university economists and poultry specialists from the Universities of Illinois, Purdue, Michigan State and Ohio State recently set "budget guides" for commercial production in their states. Their ideas of "high, low and average" production, reported in *Market Research Bulletin,* Oct. 19, 1959, were:

	Low	Med.	High
Egg production (per year per hen housed)	200	225	250
Feed conversion	4 lbs.	5 lbs.	6 lbs.
Mortality (7th to 18th month)	6%	12%	18%

Concerned about the steady decline of New York's egg production in relation to that of other areas, the poultry husbandry department of Cornell University set up these production goals for New York egg producers.

Egg production (hen-day basis)	240
Feed conversion	4½—5 lbs.
Mortality in laying houses	10%
Egg quality	95% Grade A

"These are not long-term goals," the Cornell people said. "They are fairly immediate."

A panel at a poultry convention in Minneapolis, Dec. 8 and 9, 1959, discussed, "What is reasonable performance in today's laying strain chickens?" The panel was made up of people who thoroughly know the egg business and its problems: a University of Minnesota poultry specialist, a poultry breeder and the president of a large poultry farm. Here's what they said:

Egg production	250
Feed conversion	3.8 lbs. to 4.5 lbs.
Mortality	11% to 15% per year
Egg quality	90-95% Grade A

P. C. Clayton, writing in the July 4, 1959, *Ohio Farmer* ("Want to stay in the egg business?"), said: "Here are some production standards for measuring efficiency."

Egg production (per bird housed)	220
Feed conversion	4-5 lbs.
Mortality in the laying house	10%

That's what the experts say layers *should* do. But how do to-

day's birds actually perform in the laying house? To find out, here's a look at the results of all 24 Random Sample Tests conducted in the U.S. in 1958 and 1959. As far as possible, these tests are conducted under actual commercial laying house conditions. Here are the averages for *all* entries:

Production	220
Feed conversion	4.8 lbs.
Laying house livability	88.2%
Percent large and extra-large eggs	67%

The *outstanding* bird in all these tests (based on average performance in the 22 tests in which this bird was entered) produced this record:

Production	238.9
Feed conversion	4.4 lbs.
Laying house livability	94.4%
Percent large and extra-large eggs	72.4%

Finally, let's check with two of the many egg producers who make money even at low egg prices — first, Ralph Manning, who has a 6,000-layer operation near Spencer, Iowa. Under extremely strict cost accounting Ralph Manning averaged in 1958:

Production	255
Feed conversion	4.1 lbs.
Livability	95.5%
Grade AA or A eggs	95%

And, Donald Pardum, North Highlands, California. In the 1959 Sacramento County egg-cost study, Mr. Pardum's 15,000 layers averaged:

Production	241.1
Feed Conversion	4.2 lbs.
Livability	95%
Grade AA or A eggs	94%

So that's how laying flock experts are thinking . . . and how today's laying flocks are actually doing. It is solid proof that for most egg producers the *Full Performance Index* — 250 eggs, 4.5 feed conversion, 90% laying house livability and 90% Grade AA or A eggs — is practical and attainable.

However, the FPI goals are not necessarily magic numbers. They will vary somewhat under changing conditions and from area to area. For example, during a cold winter, Minnesota egg producers may have to work hard for a 5.0 feed conversion. On the other hand, poultrymen in southern California may produce a dozen eggs on 3.8 lbs. of feed.

Speaking of feeding cows — there's no use going back of them with a pail if you haven't been around in front of them first.

And as the Cornell researchers pointed out in setting their egg production goals, "We can't afford to set static goals. These goals will require *regular adjust-*

ment." Birds, feed, housing and equipment have improved steadily year by year. They will continue to improve. And as they do, goals for profitable egg production will have to be set higher and higher.

But right now . . . as a general guide for most egg producers in most areas of the U.S. . . . FPI goals are practical. And poultrymen will make money — good money — if they meet them.

Working toward goals, of course, requires a day-to-day progress check so the flock owner will constantly know if he's on course . . . so he can quickly find and correct the trouble if performance lags. This calls for complete and accurate daily records, a time-consuming task that discourages many egg producers.

The Vital Factors For Full Performance

A flock owner will be well on his may to meeting full performance goals if he . . .

Starts with good birds: With other factors in balance, the ceiling of flock performance is determined by the bred-in ability of the layers housed. Many breeders have birds fully capable of meeting—and beating — FPI goals. With inferior birds, FPI goals can be a long way off.

Buys good feed: To even approach their bred-in potential, birds must have a balanced combination of the vitamins, minerals, proteins and energy nutrients needed for long, heavy egg production. The feed must be palatable so layers will eat enough to support full production.

Provides proper environment (housing and equipment): Even the best-bred, best-fed birds can't produce profitably if the owner skimps on housing and equipment. FPI performance demands sufficient floor space per bird and proper ventilation. Plenty of feeder, waterer and nesting space must be provided. With the modern housing and equipment now available to meet these needs, today's management can be the best ever.

It took the white man some 300 years to spread over the American continent. The corn borer has made it in 25.

However, even with good birds, good feed and conscientious management, a flock may fall short of full performance. The culprit is often *disease drag.* Here's more about this . . .

Common Limiting Factor . . . And How To Control It

Disease drag is the culprit!

Birds and animals are constantly being attacked by germs, often described as "low-level infections." This steady, relentless *di-*

sease drag is often not serious enough to cause visible, obvious sickness. But it saps vitality and strength enough to prevent birds from doing as well as they should. Laying flocks not protected from *disease drag* will have a hard time meeting FPI goals.

Rutgers University poultry experts say, "It is generally accepted that adverse environment and disease may become limiting factors in poultry production; so much so that these phenomena can completely offset the gains expected from genetically improved birds and modern balanced rations."

An aim of modern feed medication plans is to protect birds from these stresses and diseases . . to "ward off" troubles before they occur.

Now Let's Summarize The Way To Full Layer Performance

First step: Performance goals! Poultry experts and actual layer performance in commercial flocks and Random Sample Tests point to a practical Full Performance Index for layers. It's 250 eggs per hen housed . . . 4.5 lbs. feed per dozen eggs . . . 90% Grade AA or A eggs . . . and 90% laying house livability. These are general goals that may vary somewhat from area to area and under changing local conditions.

Second step: Accurate daily records! Records enable the egg producer to keep a constant check on progress toward FPI . . . enable him to tell if performance is lagging so the trouble can be found and corrected before serious losses occur. FPI record charts, available to the flock owner through feed companies, breeders, and housing and equipment firms, make record-keeping easy, make records more useful.

Third step: Every factor of production must be in balance! Good birds themselves can't work miracles. The best feed can't do the whole job alone. Better egg prices won't significantly improve profits if housing and equipment are below par. And even the best managed flock may not produce up to its bred-in, fed-in potential if subclinical *disease drag* is sapping the birds of health and vigor. Continuous protective medication through the feed is gaining favor as an effective way to control *disease drag*.

Milking machine inflations and other rubber parts should be stored in a .5 percent lye solution. To prepare a stock solution, dissolve one can of lye in a gallon of water.

Finally, the man himself, the poultryman, is the one most vital factor. If he strives his best to take advantage of all the factors

at his command, he *himself* can do most to help *himself*.

The whole FPI plan will work — but more important is the *working* of the plan. Any producer who comes close to meeting, or beats, the FPI goals, will usually fare well even in the lean years, and will do well in good years.

Management Determines Profit or Loss In Sheep Business

Few farm enterprises offer so great a chance for high profits or so great a risk of high losses as the sheep business. The difference between success and failure, according to Don Walker, is management. The University of Illinois livestock extension specialist cited records of a 1959 Illinois sheep production project as proof.

The top one-third of the producers in the project realized a return of $32 for each ewe in their flocks. The low one-third grossed only $22.

Here are some characteristics of the top producers:

1. They like sheep.

2. Their ewes lamb early so that the lambs can hit the early market.

3. They control parasites.

4. They produce good pastures for their flocks.

5. They feed grain to ewes shortly before lambing and after lambing until pasturing. Then they creep-feed the lambs.

6. They dock and castrate the lambs.

Walker emphasizes the importance of early lambing and marketing. He points out that an 85-pound lamb in June is worth as much as a 100-pound lamb in September. It is also worth as much as a 105-pound lamb in October and a 120-pound lamb in November and December. —*University of Illinois*

LETTERS TO FARMER'S DIGEST

Our readers write many interesting letters to Farmer's Digest. Some relate personal opinions and may be quite controversial. Others tell personal experiences and problems and, perhaps, ask your advice. At any rate, we are sure these letters will interest you and, we hope, prompt you to write a reply or a letter on a subject of your own.

Farmer's Digest
Fort Atkinson, Wisconsin

Gentlemen:

I am renewing my subscription to the Farmer's Digest and I like it fine, but would like to see something about Organic Farming in it. When you write about improving soil, you recommend an acid fertilizer such as 14-14-14 of which I do not have any use as it kills all earth worms and bacteria in the soil and makes the ground hard and heavy to work.

I would like to see a write-up in the Farmer's Digest about an Organic soil builder fertilizer I have read about. In fact, I would like to hear from a farmer who has used fertilizer advertised as an Organic Soil Builder and get his idea about it. I am interested in trying it next spring and I thought that you may give me some information through your paper.

Newark, Illinois

Dear Editor:

City people in this country surely don't know much about farmers and their problems, and the information they get from magazines and newspapers doesn't help but does hinder.

In a popular and widely quoted sales promotion magazine last week, I read that farmers were a "plush" market for high priced luxuries of all kinds because most farmers had gross incomes of $10,000 or more. The idea was to encourage advertisers to advertise such things as mink, color TV and diamonds to farmers because they had so much money. The writer didn't realize

the great gulf between a farmer's gross income and his "net" income. Someone should tell him.

In another current magazine, I read the old joke that goes like this:

> Dear Sec'y of Agriculture:
>
> "My friend received $1,000 from the Government for not raising hogs, so I am also going into the non-raising hog business.
>
> What I want to know is what is the best kind of hogs not to raise? I would prefer not to raise razorbacks, but if necessary I will just as gladly not raise Durocs or Poland Chinas.
>
> How much will you pay me for not raising 100 hogs, and will the same rate apply if I increase my non-raising capacity to 1,000? Also, will you pay me for not raising 10,000 bushels of corn which I will not feed to the hogs which I am not raising?
>
> Please answer soon as this looks like a fine year for not raising hogs, and I am anxious to start."
>
> Farmer Jim

In these times, getting people to think right about you is an organized profession. They call it Public Relations. Maybe farmers should buy some. Or, maybe some of the thousands of USDA people we now pay for telling us how to grow more crops we don't need could be put on the job.

Wisconsin

Ten Ways To Step Up Soybean Yields

Follow these rules to properly "set the table" and harvest a better soybean yield this year . . .

Condensed from Soybean News

SOYBEAN yields can be increased by following these ten steps:

(1) Use Narrow Rows:

Research at Illinois shows that planting soybeans in 24-inch rows will give 15 percent more yield than 40-inch rows. The researchers found this to be true regardless of variety, location, and planting date. This increase from narrow rows raises a 30 bushel field to 35 bushels and that means the extra beans on a 50-acre field would be worth $400 — worth doing something about. In southern states the advantage of narrow rows for early planting would not be so great. However, the gain from narrow rows increases there with late plantings.

(2) Fertilizer Placement is Important:

Ohio researchers tested four methods of soybean fertilization and found that the best stands and the highest yields can be obtained when the fertilizer is placed about 1½ inches to the side and 1½ inches below the seed. They say growers can lose as much as $20 to $30 per acre by placing the fertilizer too close to the seed. Well inoculated soybeans will fix most of the nitrogen they need. A soil test is a good check on the phosphorus and potassium they may need. If there is a deficiency of manganese or iron in your soil then the proper application of manganese sulfate or iron sulfate will greatly increase yields. Your County Agent or vocational agriculture instructor can be of help here.

(3) Weed-Free Soybeans Produce More Bushels:

Weeds and grass left in the row can be quite expensive. Tests in several states show that yields may be cut from 2 to 10 bushels per acre. The rotary hoe is an effective and economical weed killer in soybeans. Three year tests at Iowa with row-planted soybeans gave six bushels better yield for

Reprinted by permission from Soybean News, Decatur, Indiana

"timely" rotary hoeing plus cultivation than with cultivation alone. Increased herbicide technology should soon give us chemical weed control for soybeans at costs more comparable to cultural weed control costs.

Never give the weeds a chance. Many good farmers start the rotary hoe before the beans come up. They want to kill those weeds just after they germinate—while still "in the white". After the plants have emerged it is best to give them that second rotary hoeing in the hot part of the day. Run the rotary hoe fast enough and deep enough to stir up the soil and expose the little weeds to the sun. You will help the beans too. Two rotary hoeings and two cultivations generally give good weed control under ordinary conditions.

Missouri researchers found in two year tests, that on plots hand-weeded and cultivated twice, yields were increased an average of 7.5 bushels per acre compared with the yields of plots cultivated only. Where there were three cultivations, hand-weeding increased yields by 4.5 bushels per acre. A g o o d pre-emergence herbicide giving results equal to hand-weeding would be worth from $9 to $15 per acre.

(4) Lime Acid Soil For Increased Yields:

A pH level of 6.0 to 6.5 is best in most states. A soil test will determine the amount of lime needed. Moreover, increases from fertilizer will be greater if the pH of the soil is brought up to the required level. A lot of other crops will benefit too.

(5) Use the Best Variety:

Length of days and nights is the primary control of soybean flowering and maturity. Since length of day is governed by latitude, varieties are adapted to rather narrow belts running east and west. Highest yields are usually obtained from a productive, well adapted full season variety but for late plantings in the Northern States an earlier maturing variety will usually give better results. In the Southern States with a much longer growing season, the full-season varieties usually yield as well as earlier varieties even on late plantings. Seed should be pure and high in germination to insure good stands. Use d i s e a s e resistant varieties where disease is a problem. Control insect pests.

When the wise are angry they are wise no longer.

(6) Best Yields Came on Fertile Well-Drained Soils:

Of course, soybeans grow better than most other crops on soils that are low in fertility, droughty,

or poorly drained, but don't expect to break your state record yield on that kind of field.

(7) Inoculation is Good Insurance:

For 10 to 15 cents an acre you can help this crop to fix its own nitrogen and even leave a residue in the soil for other crops. Use inoculation made especially for soybeans and follow directions on the container.

(8) Plant Enough Seed:

The general rule to follow is plant one good seed every inch of row. This encourages rapid growth and aids in weed control, but stands closer than 10 to 12 plants per foot of row may seriously increase lodging. Check your planter, see if you are planting the proper amount of seed.

(9) Plant At Best Time:

Soil temperature and day length determine the best time to plant soybeans. In the Northern States it is when the temperature and the soil are warm enough to give rapid germination and growth—which is about corn planting time. In the Southern States it is best to wait a while or the short days will cause most varieties to flower too early and thus reduce yield and quality and increase the problem of weed control.

Prepare a good weed-free seedbed, then just before planting the soybeans kill the weeds with a harrow or disk. Plant the seed 1 to 2 inches deep in moist soil. If the soil is too dry, better wait for a rain than to plant too deep trying to reach moisture.

(10) Don't Let the Combine Throw You:

The farm machinery makers have not yet got around to soybeans. Therefore, planters, cultivators, and combines made for other crops must be adjusted for soybeans. Adjusting the combine is mighty important. Harvesting loss can cut your profits; losses of 10 to 20 percent at combining time are not uncommon. Don't let it happen to you. Four beans to the square foot in the field means a bushel per acre.

A soil survey will show the best uses of your land. Careful study and planning with the help of your professional agricultural workers will help you get the greatest possible benefits.

Reel and cylinder speeds and cylinder clearance must be adjusted. Spend a little time checking your combine instruction manual for proper settings. It may pay better than any other time you spend with the soybean crop.

Chimney Smoke

by Irene Rudie

The loom of time has ever been
A pattern weaving, all unseen;
Wise folks teach children soon to see,
And weave their patterns carefully.
—Author unknown

★ ★ ★

A winter ice storm makes of the world a glittering shop of costly crystal. I can slip a glass tumbler from the end of a stick of stove wood, or a slender vase from a hay fork handle.

★ ★ ★

Whatever a home may or may not have in furnishings and conveniences, in order for children to thrive in it, there must be an atmosphere of love and laughter from wall to wall, and from floor to ceiling.

★ ★ ★

When the sewing machine runs effortlessly and faultlessly over an especially difficult part of a garment, that's when there's no thread in the bobbin.

★ ★ ★

People who live in large cities may have to buy their calendars, but here in the country, we still get dozens of them free. If I like a particular calendar for the large clear spaces around the numbers for making notes, or another one for its small unobtrusive numbers, but don't like their pictures or advertising, I simply find a picture that I do like and paste that over the offending one.

★ ★ ★

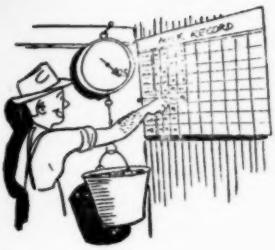
The kindest words I've heard to date, are these: You're losing weight!

★ ★ ★

It's hard for most people to accept praise or compliments gracefully, but dogs know how. Say something nice about a dog and he looks alert and pleased, and applauds by thumping the floor with his tail.

★ ★ ★

A New Year superstition: Always have something cooking on the stove when the New Year comes in to insure full pots during the coming year. Another: Anything left unfinished on Dec. 31 will never get done; therefore finish all mending and sewing by the first of the year.



How Much Milk Will She Produce?

Production records give the fastest, most accurate answer . . .

Condensed from Agricultural Research

USING production records to select dairy breeding stock is the fastest way to build high-producing, moneymaking herds. Dairy type or physical appearance is valuable chiefly in eliminating obvious abnormalities.

These conclusions come from a USDA study of research results obtained in the past quarter century. They show a need for more emphasis on production records and less on the traditional score card classification.

The study included analyses of data on Holstein-Friesian, Jersey, and Ayrshire cattle reported by agricultural experiment station workers in Wisconsin, West Virginia, Iowa, Illinois, and Canada. It is part of a larger study, now nearing completion, by Agricultural Research Service dairy husbandman N. D. Bayley and associates to determine the influence of type on milk production, longevity, and merchandizing value.

The scientists found only a slight relationship between dairy-type score (Excellent, Very Good, Good Plus, Good, Fair) and production ability. Many cows with high dairy-type classifications are high producers at least partly because they get better feed and care. This tends to exaggerate type-production relationships, especially when evaluations are based on production averages for cows in different herds.

Slight Relationship Shown By Record Check

For example, Holstein records showed a difference in average butterfat yield of 11.4 percent between all cows rated Excellent and those rated Good Plus. But a Wisconsin analysis of records of 45,000 Holstein cows showed a difference of only 6.7 percent between the Excellent and Good Plus cows in the same herd. The lower percentage ruled out feed and management differences and more nearly reflects the true and low relationship between type

Reprinted by permission from
Agricultural Research, United States Department of Agriculture, Washington 25, D. C.

score and production.

The analysis also showed that production cannot be predicted on the basis of type rating. On the average, prediction of butterfat misses actual production by as much as 69 pounds. This error is greater than the entire difference of 60 pounds between the lowest (Fair) and the highest (Excellent) type cows in the herds studied by Wisconsin workers.

Of the components that make up a type score, dairy character appears most closely associated with production. Barley estimates that selection on dairy character alone is about four times as effective in raising milk yield as is selection on total type score. Progress is still less than half as fast, however, as it is when selection is based on single lactation records. Used with production records, dairy character increases breeding progress by 2 or 3 percent, compared with only 0.4 of 1 percent when total type score is used.

Dairy Character is Difficult To Describe

A serious drawback to dairy character as a selection tool is difficulty in describing it exactly. Many judges consider dairy character as "general appearance for milkiness," but their interpretations vary widely. The scientists found greater variation in scores for dairy character than for any other type component.

Some traits associated with a heavy milker—thin, angular body and full, distended udder—may be the result rather than cause of high production. Also, well fed animals tend to show less of these traits than poorly fed animals with similar yielding ability. However, since dairy character does have some use in estimating production of lactating cows without records, an objective definition is urgently needed.

What do these research findings mean to commercial dairymen? Bayley sums up like this: Dairymen with average- or low-yielding herds should concentrate on better management and selection on the basis of production records. Those who have built highly productive herds, through good management and selection based on production records, should recognize that if they now desire to select for improved type, they must go slower in increasing milk and butterfat production.

"Success is 1% inspiration, 99% perspiration" — Thomas Edison.

Bayley believes that when dairymen become more aware of the slight relationship between type and production, they will give much less importance to type.

Nitrogen Is Key To Success With Continuous Corn

Continuous corn is dependent upon adequate nitrogen. Yields have been maintained at the Ohio Agricultural Experiment Station over a six-year period. Fertilizer can be substituted for plowing down legumes . . .

Condensed from
Ohio Farm and Home Research

Glover B. Tripplett, Jr.

WITH adequate nitrogen, high yields of continuous corn were maintained at the Wooster, Ohio, Agricultural Experiment Station over a six-year period.

These results indicate that plowing down a legume is not an essential requirement for high corn yields providing fertilizer nitrogen is supplied as a substitute for legume nitrogen.

Until recently, legumes have been the most important source of nitrogen for corn. Older experiments designed to evaluate various cropping systems were initiated when commercial nitrogen was used sparingly and the most reasonable source of nitrogen was quite expensive. During this era most of the emphasis in cropping research was directed toward the evaluation of various legumes as a source of nitrogen in different cropping sequences. Later, price trends toward less expensive nitrogen and higher value corn made it possible or even desirable to substitute commercial nitrogen for legumes.

In most of the early rotation experiments in Ohio and other states the continuous corn received little or no nitrogen. Under these nitrogen-deficient conditions, yields rapidly dropped to an average of 15 to 20 bushels, while corn in rotation with legumes often yielded three to four times as much. As research workers began using higher rates of nitrogen fertilization on continuous corn, they found that yields

Reprinted from
Ohio Farm and Home Research, Ohio Agricultural Experiment Station, Wooster, Ohio

were improved considerably, but were not as high as yields with the best rotation.

Experiments with continuous corn were initiated in 1953 at Wooster and the Northwestern Substation at Hoytville, also in Ohio. The experiment at Wooster was placed on the site of the previous experiment in continuous cropping dating from 1896. The area which was low in fertility and organic matter, was fertilized with high rates of phosphorus and potassium, limed to a pH of 7, and seeded with alfalfa. Comparisons between continuous corn and corn in a three-year rotation of corn-wheat-alfalfa with and without 200 pounds of nitrogen per acre were initiated in 1954. This rate of nitrogen eliminates one criticism of earlier rotation experiments which received inadequate nitrogen fertilization. All crop residues were plowed under each year; the stand was maintained at 18,000 plants per acre or more. Because of the nature of the site, erosion was not a problem in this experiment.

Corn yields varied with the seasons, but nevertheless averaged 87 bushels per acre over the six-year period for continuous corn with nitrogen while corn in rotation without nitrogen averaged 73 bushels. This 14-bushel difference in favor of continuous corn resulted from the 1958 season when yields from corn in rotation were comparatively low. From these data, continuous corn with nitrogen cannot be considered as a better treatment than corn in rotation, but yields were equal to those from corn in rotation without nitrogen. Corn in rotation with nitrogen and continuous corn without nitrogen averaged 93 and 31 bushels, respectively.

A comparison of yearly production for the corn in rotation and continuous corn with nitrogen showed that corn following a legume averaged about six to eight bushels more each year than the continuous corn. After six years, there was no apparent indication that the difference in yield between the two treatments was increasing. Thus, adequate rates of commercial nitrogen plus residues plowed down each year seemed to afford practically as good an environment for corn growth as the optimum treatment of rotation plus nitrogen.

The yields of continuous corn without nitrogen declined to 14

Underground drainage from septic tanks, cesspools, silos, and barnyards can ruin an otherwise good water supply. It is wise to use adequate safeguards.

bushels in 1958 and to eight bushels in 1959. Corn in rotation averaged 73 bushels over the six year period with no apparent decline in yields. In this case, yields of continuous corn were not maintained at a level near that of the rotation, but were depressed to very low values. This corn suffered from an extreme nitrogen deficiency.

At the Northwestern Substation, yields from a corn-soybean sequence averaged 30 bushels of beans and 80 bushels of corn over a six-year period when adequate nitrogen was used on corn. During 1959, the corn yields with nitrogen averaged 98 bushels and soybean yields 38 bushels, respectively. These yields compared favorably with corn after alfalfa and again showed no tendency to decrease.

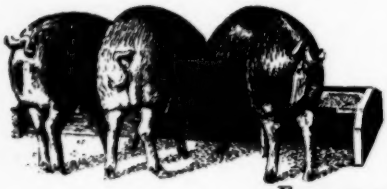
Mulch Protects Strawberry Beds

Killing frosts should serve as a warning to growers to prepare to put their strawberry patch to bed for the winter, according to Thomas J. Tatterson, Extension fruit specialist at West Virginia University. Although plantings need not be mulched until the temperature drops to 20 degrees, it is well to make preparations early, he said.

Be sure there is enough good mulching material on hand to do the job. Seed-free wheat straw is the ideal mulching material, but other straws, early-cut hay, chopped cornstalks, leaves, and pine needles are often used. Any of these materials will do if they are free from seeds, and not too heavy, or too light. Have enough mulch to cover the plants just so only a few plant leaves can be seen. The amount will vary from 1 to 5 tons per acre. Most people use about 3 tons. Different localities have harder winters; therefore, more protection is needed.

Frequent warm periods may melt the snow and thaw the top 3 or 4 inches of the soil several times during the winter months. This means that strawberry plants not only are partially heaved from the soil, but also have no protection in many cases when temperatures are below 15 degrees—the critical temperature for injury to the tissues of the crown of the plant. That makes mulching even more essential in the middle area of the U.S. than farther north, where the snow stays on all winter, or farther south, where temperatures do not drop so low, Tatterson cautioned. *—West Virginia University*

A Forward Look At The Swine Industry



With all segments of the swine industry working together toward a common goal, there are real opportunities in years to come.

Condensed from The American Hampshire Herdsman

From a speech by

Bernard Ebbing, Livestock Service Department, Rath Packing Co.

LET us recognize that this industry is divided into five distinct groups. 1) Producer, 2) Marketing Agencies, 3) Processor, 4) Retailer, 5) Consumer.

This was not always the case. Some years ago, the producer, processor and consumer were one and the same. The farmer raised his hog, slaughtered, processed and consumed it. It was a rather crude operation . . . eating most of it fresh and preserving the balance. The weather was a big factor . . . with most processing done in the winter time and if there was any surplus, the producer became a distributor.

The development of modern transportation, refrigeration, and packaging over the years has resulted in our present-day complex system. Don't lose sight of the fact that the future of this pork business will be determined by group five . . . the consumer. In this group, we are all critical—critical of the producer, the processor, and the retailer. Why don't they raise better hogs, process them better, and merchandise them better? We, as consumers, want leaner, heavier muscled, more palatable pork at a somewhat uniform price throughout the years.

Prior to World War II, the industry was working on less lard and lighter hogs, but because of the war which stimulated demand for both meat and fat, quality disappeared. As we came out of the war, the attitude that prevailed was "a hog was a hog" throughout the industry. That is to say. . there wasn't much difference, not enough to sort him out from the 80 million other hogs that had to be slaughtered, other than by the traditional weight groups. This is where we were 13 years ago.

Since 1946, there have been numerous developments which represent departures from this old attitude. I am happy to say that my Company did research on the

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dollar and cents values of different kinds of hogs. They worked with the U. S. Department of Agriculture in the development of the U.S. No. 1, U.S. No. 2, and U.S. No. 3 hogs. Along with this, my Company saw fit to buy hogs on a new method . . . carcass grade. Our Company, as well as many others, recognize this declining consumer acceptance of pork and trained buyers to recognize this new quality value in live hogs. They paid producers more for the meatier type and discounted the over-fat, meatless hogs. The packing industry, some three years ago, announced through the American Meat Institute, that it was adopting a national policy on a new look in pork called the "close trim".

I want to remind you that these significant developments have taken place in the last 10 years in a free-enterprise system. I want to say that you cannot legislate a consumer's acceptance to meat-type hogs.

We, in the packing industry, must work toward identifying this superior meat-type product. It may be called select, meaty, or some other name, because today, heavy cuts from 200-225 pound well-muscled hogs are not being priced properly. As an example . . . the trade prefers a 10-12 pound pork loin. The pork loin from a 210 pound hog, that has 30 inches of carcass length and 4 inches of eye muscle, is going to weigh 14 pounds. I have no doubt that this will be corrected in the near future.

I might say that our pork quality has improved greatly because we have eliminated a large percentage of the short U.S. No. 3 hogs. We are not receiving the complaints from retailers on pork loins that we were 5 years ago. The job isn't complete . . . but we have come a long way.

Each of us here is vitally interested in profitable pork sales—which boils down to having a good demand at the consumer level.

I would like to take each of you into a modern self-service food market this afternoon—not to look at the food, but at the shoppers. Quickly you would notice that the pork items in which each of us are so vitally interested are in stiff competition with thousands of other items . . . not only other meat items, but other products on display and all competing for her spendable dollars.

You would notice too that this shopper, the famous American

Geneticists are hoping to introduce nematode resistance into sugarbeets by manipulating chromosome numbers.

homemaker, is pushing her cart through a colorful and musical atmosphere. She's doing something in which she has confidence . . . at least in her own mind she's buying more food and better meals for her family per dollar than anyone could possibly do.

Though this happy little homemaker may be a sweetheart to Dad and a loving Mom to her children, she's a tough shopper. She buys your product because she hasn't found a better one. Given the opportunity, she will grab something better or newer . . . something tastier or easier . . . something quicker . . . a handier package . . . a better color . . . a better buy!

How does this relate to pigs and pork? Just this way—it means that pork must be promoted better to the consumers than any other competing item. She spends just so much, and eats just so much . . . only part of the meal and money budget goes for pork. The challenge then is to make pork appealing, exciting and vital in all meals. There has been considerable activity by packers along these lines.

For years consumers balked on pre-sliced bacon, but since it has caught on sliced bacon is as common a household food as bottled milk or sliced bread. She didn't want sliced bread until it was invented . . . she never asked for instant coffee, and was slow to buy, although blind taste tests proved its excellence . . . she was satisfied with "spray" deodorants until "roll-on" came along. The life blood of advertising and modern merchandising is change. Over 80 percent of the items in a super market did not exist in their present state at the end of World War II. Also keep in mind that 20 percent of the food stores do 80 percent of the food business.

You know what happened in soap? Well, white was swell . . . until colored came along. For example, Camay was a leading brand for years . . . but their share of the market dropped from

Farmers today are getting 76 percent more nutrients per ton of mixed fertilizer than they got 30 years ago.

12 percent to 8.3 percent in three years. Then they made a product change that sent their share of the market back to 12.5 percent and one year later to 13.1 percent, showing continual growth. They added color and told consumers this new soap with the expensive French perfume was more fragrant and washed better than ever before. Sales showed consumers liked the change.

Now, I would like to talk about

a product in which I am more aware of the actual details . . . and of which you will be more interested in results and some of the mechanics which go into a product change. The product is the well-known Rath Black Hawk Hickory Smoked Ham-in-a-Can.

I might add that months of product research and development, followed by much premarketing, went into this new type product. Basically, the change was that we smoked our canned hams, when normally canned hams were not smoked.

From surveys, we found that four out of five consumers definitely preferred the flavor of a smoked ham, and only one preferred the bland flavor of the old conventional canned ham. However, they did prefer the ease and convenience of a canned ham.

Now that we knew this to be true and had the right product, we had to tell people about the change. The basic advertising media was "Life Magazine", read by 32 million people each issue. The first ad was a double page, full color ad. Incidentally, it is interesting to note that a single page colored ad in "Life" costs approximately, $40,000.00 . . . in itself a big figure, but broken down to a cost per impression it is a different story.

Then we followed with an ad that featured the Smoke House atmosphere built right into the ad.

Of course the big problem before the adds appeared, creating a demand at the consumer level, was creating a desire on the part of buyers to squeeze the product into his precious store space with from 5,000 to 7,000 already established food products in his retail store.

Our Sales people had to carry the story to retailers all over the country. To complete the task, there are many complex sales tools such as brochures and in-store display pieces.

The most interesting of these items was a giant Smoke House.

In the past 20 years, the human race has increased in numbers by about 700 million. In the next 20 years, well over 1 billion people will be added if the present growth rate continues.

It was colorful, dimensional and electrically-lighted . . . mighty hard to pass by in the market . . . and certainly made a bigger impression on impulse buyers than the average of 5,000 other competing items in the store. Needless to say, Hickory Smoked Hams-in-a-Can received excellent reception.

There are constantly new ideas . . . product improvement and conveniences being built into pork products . . . to help homemakers decide that pork can be served more often and in many different and exciting ways.

Although there is much being done, there is still much more to do . . . pork processors are trimming closer, boning more cuts, and making more fully-cooked items. There are many new approaches for making pork products more appealing in the research and development state right now. You will see more in the future . . . push-button foods for push-button living.

I am sure there is no push-button pig in the near future . . . but, thanks to interested universities for their research that has given producers the tools to produce better pork. Thanks to the breeders with their certification and swine evaluation station data —they have given producers the best breeding stock we have ever had. And, thanks to the producer who is producing the leaner, meatier-type pig . . . plus farrowing on a more uniform basis to get away from peaks and valleys in supply.

All these activities, better hogs . . . more even supplies . . . research . . . advertising . . . improved products, add up to terrific expenditures; but demand for pork must be constantly maintained and increased. Remember, there are many countries that eat little or no meat. Some eat more than the United States per capita consumption.

Let's all work to produce a better product on the farms and in the packing plants. Let's all work to promote and advertise pork at the packing plant and retail level. Let's present pork in a favorable light whether we are producers, processors, or retailers. Let's use it in our home and tell our friends. We need to encourage additional research in breeding and quality improvement, nutrition, d i s e a s e, equipment and buildings, management, processing, and merchandising. The swine industry has some real opportunities in years to come.

Ducks are about the fastest growing domesticated animals, reports H. H. Kauffman, extension poultry specialist at Pennsylvania State University. They weigh slightly over one-tenth of a pound when hatched and increase their original weight 60 times during the first eight weeks. If the calf from a beef animal would grow in the same manner, it could weigh about 2¼ tons at eight weeks.

FUN ON THE FARM

A Collection of Jokes and Humorous Farm Stories

A story by Bennett Cerf claims that a farmer was reported to be so close with his wages that the government sent out a man from the Wage Board to investigate.

"We hear," said the bureau man, "that you are breaking the law by paying below minimum wages."

"You do, eh?" said the farmer. "Well let me think. There's Mike who milks the cows and watches TV most of the day—gets $40.00 and found, a week. And there's Annie—supposed to do the cooking but reads movie magazines most of the time—she gets $35.00. Then, there's my son Joe who knocks holes in the barn with baseballs and drives the car around all night—he gets $30.00."

"Can't see anything wrong there," said the government man, "is that all your help?"

"Well," sighed the farmer, "there's just the half-wit left. Sometimes I think he has it pretty rough. He works 18 hours a day—sometimes more—and gets his room and board and a couple dollars a week for tobacco."

"Ah," the inspector, perked up, "I'd like to talk to him."

"You're talking to HIM right now," said the farmer.

—Butter-Fat

★ ★ ★

A husband and wife were discussing their financial difficulties.

"It's the neighbors' fault, not ours," the wife said. "They're always doing or buying something we can't afford."

—Successful Farming

★ ★ ★

The circuit preacher, making his rounds on horseback through the hill country, found one of his aged parishioners contentedly puffing a pipe on the porch of her shack.

Pointing an accusing finger at the offending pipe, the preacher asked, "Miz Wilkins, do you expect to be saved?"

"Yes, Reverend, I do," she answered.

The preacher's voice rose. "Don't you know, woman, that the Bible says nothing unclean shall enter Heaven? How do you expect to go there with your

breath smelling of evil tobacco?"

"Well, Reverend," Miz Wilkins said between puffs, "when I die, I 'spect to leave my bref behind."

—Arkansas Valley Journal

★ ★ ★

A baby cries when it is born because it is hungry, naked and already owes the government $1,500.

★ ★ ★

A middle-aged widow was considering the purchase of an old farm house. After looking over the house and hearing the real estate agent's sales talk she finally said, "I think I could do a lot with this house." Then she hesitated and added, "But, come to think of it, that's what I thought when I met my late husband."

—Michigan Farmer

★ ★ ★

When a youth begins to sow wild oats it's time for father to start the threshing machine.

Gibbon, Nebraska, Reporter

★ ★ ★

A backwoodsman mountaineer found a mirror which a tourist had lost. "Well, if it ain't my old dad," he said as he looked into it. "I never knew he had his pitcher took." He took the mirror home and hid it in the attic but his suspicious wife was s e c r e t l y watching. That night while he slept she slipped up to the attic and found the mirror. "Mmmm," she said, looking into it, "so that's the old hag he's been chasin!"

—Implement & Tractor

★ ★ ★

Marriages are made in heaven, which is probably why most married couples are always harping at each other.

★ ★ ★

A jaunty salesman parked his foreign sports car in front of a village store and went in. When he came out, a farmer was looking the car over.

"Well, what do you think of it?" asked the salesman. And the farmer just said, "Picked that one 'fore it was ripe, didn't ya?"

—New England Homestead

★ ★ ★

"What happened to that city feller you hired to help out on the farm?"

"Well, he used to be an automobile mechanic and he climbed under the mule to see why she wouldn't go and she went."

—Farm Store Merchandising

★ ★ ★

The family cat had just presented the household with a litter of kittens. Junior went down into the cellar to inspect them, and shortly his mother heard a medley of howls.

"Don't hurt the kittens, Dear," she called out.

"I'm not, Mom," the youngster replied. "I'm carrying 'em real careful — by their stems."

—Hoards Dairyman

To her complaining daughter, a wise grandmother said: "Just be glad your kids are between 7 and 13 years. Those are perfect ages—too old for baby sitters and too young to drive your car."

—*The Furrow*

★ ★ ★

"You should advertise!" the canvasser told the proprietor of a small neighborhood store.

"No sir! I'm agin it," was the emphatic answer.

"But why?"

"Advertising don't leave a man no time," the man replied. "I tried it once last year and I was so doggone rushed I couldn't get in no fishin' all summer."

—*Better Crops with Plant Food*

★ ★ ★

Folks can make monkeys of themselves by carrying tales.

★ ★ ★

A scientist invented a serum to bring inanimate objects to life. Secretly he tried it out on the statue of a general in a park. Sure enough, the general gave a quiver and climbed down from the pedestal. The scientist was overjoyed. "Tell me, general," he asked, "what's the first thing you're going to do in your new life?"

"That's easy," rasped the general, jerking a gun from his holster, "I'm going to shoot several thousand of these pigeons."

Billy Bilger in The National Future Farmer

S o m e old-fashioned mothers who can remember their husband's first kiss, now have daughters who can't remember their first husband's.

★ ★ ★

"A man is never older than he feels. Now, this morning I feel like a 2 year old," the man of the house exuberantly exclaimed.

His wife s w e e t l y replied, "Horse or egg?"

★ ★ ★

The real reason it's so hard to bring up children right is that they insist on imitating their parents.

★ ★ ★

A northern farm hand went to work for a Texas rancher. There had been a long drouth, and every man on the ranch was hoping for rain. One day it started to sprinkle, and the farm hand, to show his delight began to dance in the rain.

"Hey, you," shouted the ranch owner, "come in out of the rain!"

"Oh, I don't mind it a bit" called back the farm hand.

"That isn't the point," insisted the rancher. "I want every drop of that water to fall on Texas."

Texas Farming and Citriculture

★ ★ ★

An old-timer is one who remembers when his mother used to spank him for cracking hickory nuts on the hearth with the face of a smoothing iron.

It all depends upon the point of view. One old-timer said to the other: "Gosh, Bill, don't you wish we were barefoot boys again?"

"Not me," replied Bill. "I work on a turkey farm."

★ ★ ★

A speaker was lecturing on forest preservation. "How many of you have done anything to conserve our forest resources?" Silence ruled for several seconds, then from the rear ventured, "I once shot a woodpecker."

—The Ohio Farmer

★ ★ ★

Three men were brought into court for disorderly conduct. The judge asked one what had caused him to be arrested.

"I threw peanuts into the water," the man replied.

"That's not very bad," said the judge.

Turning to the second man, he asked, "What did you do?"

"I threw peanuts into the water, too," he answered.

"Well," said the judge to the third man, "I suppose you threw peanuts in the water, also?"

"Oh, no, your honor," replied the third man, "I am Peanuts!"

—The Balance Sheet

★ ★ ★

A young farmer returned home tired out from a hard day in the fields to find his two children rushing madly about the house and creating a general disturbance.

He gave them both a scolding and sent them off to bed as soon as they had eaten their supper.

The next morning he found this note pinned to his bedroom door: "Be good to your children, and they will be good to you. Yours truly, God.

★ ★ ★

Everything in the modern home is controlled by switches today—except the children.

★ ★ ★

There's something feminine about a tree. It does a strip tease in the Fall, goes with bare limbs all winter, get's a new outfit every Spring and lives off the saps all Summer.

★ ★ ★

A new postman plodded manfully along the lane that led to a lonely farm in the Yorkshire dales.

"By gum, but it's a long lane to your house!" he told the farmer, on arrival.

"Aye, it is, that," came the reply, "but if it were any shorter it wouldn't reach."

—Farmer and Stock Breeder

★ ★ ★

The difference between gossip and news is whether you hear it or tell it.

★ ★ ★

Census Taker (to woman at the door) — How many in your family?

Woman — Five. Me, the old man, the kid, cow and cat.

Census Taker — And the politics of your family?

Woman — Mixed. I'm a Republican, the old man's a Democrat, the kid's wet, the cow's dry, and the cat's on the fence.

★ ★ ★

A stolen kiss frequently leads to marriage, which proves crime doesn't pay.

Contributions for this page are welcomed. Send your "Fun On The Farm" story to Farmer's Digest, Fort Atkinson, Wisconsin.

Cost of Fertilizers Tax Deductible

Attention has been drawn to a little known law which offers farmers and ranchers clear-cut opportunity for deducting the cost of fertilizers in income tax figuring. Stephen H. Hart, attorney for the National Live Stock Tax Committee, said that the legislation was almost obscured among final bills passed during the abbreviated session this past summer.

The new amendment to the Internal Revenue Code provides that a farmer or rancher may elect to treat as ordinary business expenses those sums which are paid for or incurred in the purchase of fertilizer, lime, ground limestone, marl or other materials to enrich, neutralize or condition land.

The measure also includes the costs of application of such material.

Hart said that the legislation resulted because some revenue agents were attempting to require farmers and ranchers to capitalize the cost of fertilizers and other land conditioning material. This new law, according to Hart, precludes revenue agents from taking such a position in future interpretations of the complicated code.

Hart advised ranchers and farmers to check with their local attorneys or tax experts for details of the new law and its application to individual situations. —*National Livestock Tax Committee*

Pigeons Are Lots Of Fun And They Make Meat, Too

Becoming a pigeon raiser doesn't require a lot of capital and it's fun . .

Condensed from The Farmer-Stockman

Alex G. Warren, Extension Poultry Specialist, Oklahoma State Univ.

PIGEONS, the little birds with a wide variety of talents, are becoming more and more popular. Clubs have been formed and some very good pigeon shows are being held.

Pigeon fanciers have an almost endless variety of sizes, colors and shapes from which to choose. Some are strictly for show, others are efficient producers of delicious squab meat and a few have special talents that make them valuable.

Pigeons range in size from the tiny Budapest which weighs only a few ounces to the giant Runt, which sometimes reaches 4 lbs. Pigeons such as the Oriental Frills and Owls have beaks so short their babies must be farmed out to others to raise. The Berlin Long-Faced Tumblers have beaks more than twice as long as their heads.

The common blue pigeon weighs 14 to 16 oz., and is smooth feathered and clean-legged, while such varieties have been developed as the Trumpters and Swallows which have crest feathers on the head and feathers on their feet up to 5 inches long. Pigeons come in yellow, red, blue, black, dun, silver, white and combinations of these colors.

The tiny Parlor Tumblers, unable to fly, turn backward flips along the ground when disturbed. The popular Birmingham Roller turns backward flips in the air about every minute while flying. They were developed around Birmingham, England.

Pigeons raise their own young, laying 2 eggs at a time. A good pair will produce up to 20 squabs a year. Pigeon eggs hatch about 17 days after being laid and young birds often are ready to leave the nest at 5 or 6 weeks. Good working pairs will have 2 squabs in the nest and another nest where they are sitting on eggs close by. As the older squabs are weaned they have 2 new ones

Reprinted by permission from The Farmer-Stockman, 500 North Broadway, Oklahoma City, Okla.

to occupy their time.

Male and female pigeons take turns sitting on eggs and feeding squabs. Pigeons produce a fluid in their crop called "pigeon milk" which they feed to tiny babies.

Many youngsters enjoy keeping pigeons. They require little room, and if plenty of feed and water is supplied, they will get along fine while the family is away on short vacations. If pens are kept clean there is no offensive odor, and since pigeons are not noisy they are often kept in cities. Pigeons enjoy a bath once a day and large, shallow bathing pans should be kept in the loft along with clean drinking water.

Pigeons eat the common grains such as milo, corn and wheat. They enjoy dried peas very much. They also like millet and can be fed prepared pigeon pellets which many feed companies make. Any good chicken mash or game bird ration is also good for them and they will eat it readily, especially if it is in small pellets or crumbles.

Becoming a pigeon raiser doesn't require a lot of capital. Good birds in many breeds sell for around $5 per pair. However, some exceptional pigeons bring very high prices.

10 Rules To Produce Quality Eggs

The best reason for producing high quality eggs is that this is the kind that makes you the most money, say extension poultry specialists at the University of Missouri.

Producing quality eggs is quite simple if you follow these 10 rules, say the specialists.

1. Confine layers at all times.
2. Gather eggs three to four times a day.
3. Send only clean eggs to market. Wash or dry-clean dirty eggs using approved methods.
4. Cool eggs in a mechanical cooler for 12 hours before casing.
5. Keep egg cooler at 55 degrees F. with 75 to 85 percent relative humidity.
6. Pre-cool cases 12 hours before casing eggs.
7. Pack eggs small end down.
8. Hold cased eggs in the cooler until picked up or delivered.
9. Market eggs twice weekly.
10. Keep an all-pullet flock. Dispose of birds after a 12 to 16 month laying period.

—University of Missouri

Today's Most Challenging Question About Soil

If the world's population keeps increasing at its present rate, how long will the soil be able to grow enough food to feed everyone adequately?

Condensed from
Organic Gardening and Farming

Robert Rodale

QUESTIONS about soil are the most important facing humanity today.

All over the world populations are expanding. *Exploding* would be a better word. China will soon have a billion people. The U.S. is rapidly heading for the 200-million mark. As doctors reduce infant mortality and contagious diseases, the birth rate soars. Sociologists are dusting off Malthus's theory that population increases faster than the means to produce food—and are wondering whether it doesn't make sense after all.

At the recent International Soil Science Congress at Madison, Wisc., it was stated that the chief challenge to soil scientists today is the need to produce food for expanding populations. While the social scientists have had negligible success in persuading people to use birth control methods, the soil scientists have had excellent success in making the soil produce more food. Therefore, the soil people must assume the primary role in solving the world's food problem by virtue of their past achievements.

The chief question for soil scientists today, however, is: Can food production be increased to meet growing needs without wearing out the soil? The tremendous growth of food production in the U.S. can not be attributed to increased fertility of the soil. Man has just developed more efficient means of making the soil give up its treasures quicker. Scientists at the International Soil Science Congress stated that crops grown in the U.S. take 15 million tons of nitrogen from the soil, while fertilizers and legumes replace only about 5 million tons. So we are

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far from having a permanent agriculture in this country.

Increasing population also consumes cropland for use as living space. Every year we lose two million acres of cropland to highway, urban and industrial expansion. As of now we have 510 million acres of cropland in this country, but we won't have that much for long. Highways and buildings usually use up the best level farm land, so we are losing close to two million acres a year of our best farmland.

No one can say if and when the world's population will outstrip its food supplies. Perhaps Nature's balance will take effect and somehow correct the situation. But we shouldn't just sit around and wait for that to happen. The first step to a solution would be to start putting back into the soil as much as we take out. We are a long way from doing that now. Can healthy people live on poor soils?

Simple logic indicates that since most of our food is produced by the soil, our health would be dependent upon the quality of the soil from which our food originates. However, many elements of our agriculture and food-producing industry refuse to think in terms of a relationship between the soil and health. Soil scientists in our agricultural colleges especially seem to shy away from the idea, possibly from a conscious or subconscious fear that if the soil-health relationship is recognized as true they will be held responsible for the health of the nation.

One of the reasons stated by soil scientists to get themselves off the hook is as follows: "Since the average American eats food from many different areas, he gets a balanced supply of all necessary nutrients." The implication is that not all American soils are bad in the same way. And the hope is that by putting the bad and the good together in the great American supermarket and shaking them up, the bad will disappear and the good emerge triumphant.

Improperly functioning milking machines can cause mastitis, explain veterinarians. They recommend periodic checking to insure proper vacuum, pulsations and good operating condition of all parts.

One soil scientist who is firmly convinced that poor soil produces poor health is Dr. William A. Albrecht of the University of Missouri. He proved his contention to his own satisfaction by his discovery that draft rejections in Missouri in World War II were higher in poor-soil areas than they

were in good-soil areas. Unfortunately there haven't been many other studies like that made. Health is rarely analyzed in terms of soil.

The chemical fertilizer industry has had a tremendous influence on all of our thinking and policy concerning soil. Much of our soil logic has been tailored to make the fertilizer idea seem more sensible. For example, we are told that if we use artificial fertilizer we will produce "better food." But if we claim that our highly organic soil with its superior nutritional balance produces better food, we are told that it can't be done—that nothing you do to the soil makes any difference in the nutritional value of the food it produces. Obviously only one of those statements can be right, but that doesn't stop some people from trying to use both.

Kenneth C. Beeson of the Department of Agriculture is on the right track. In the 1957 Department Yearbook entitled *Soil,* he made this statement: "An effective system of soil management will aim to provide food and feed crops with an optimum level of all nutrients required by animals and man. Such a system will seek to avoid upsetting nutritional balances simply to provide greater yields." Just how far his ideas will penetrate is hard to predict. So far, high yields have been the one overpowering goal of the American farm system and hardly anyone has stopped to consider whether higher yields can mean lower nutritional quality, as Dr. Beeson suggests.

The official view—held by everyone from the President of the United States to the advertising manager of A&P—is that "America is the best-fed nation on earth." That view is utterly wrong, because it confuses quantity with quality.

Was Abraham Lincoln right when he said: "The land, the earth God gave to man for his home, sustenance, and support, should never be the possession of any man, corporation, society or unfriendly government, any more than the air or water, if as much. An individual, or company, or enterprise requiring land should hold no more than is required for their home and sustenance, and never more than they have in actual use in the prudent management of their legitimate business, and this much should not be permitted when it creates an exclusive monopoly. All that is not used should be held for the free

A farm that was the right size for horsepower is not the economic proper size for tractor power. SRI Journal

use of every family to make homesteads, and to hold them as long as they are so occupied."?

A century ago, Lincoln recognized a problem that is today one of the most burning issues of the time—the ownership of the soil. People in underdeveloped and land-poor countries all over the world are seeking ways to put the soil to work for the greatest good for the most people. The methods used are different, but all have a similar purpose. The Communists execute landlords and set up vast state farms, a technique of which Abraham Lincoln would not approve. Less radical governments appropriate land and distribute it directly to the peasants. And in England and other countries there are strict laws requiring landowners to maintain the production of their farms.

How the soil is used and who owns it will become increasingly important questions as the population of this planet increases—as it is doing so rapidly. The frontiers are now closed. There is no more new land to be had just for the taking, but the number of mouths to feed is growing all the time. Different political means will be called into play to control the use of the soil, but the intention will be the same in all countries. People want the land to be put to the best use for the most people.

Here in the U.S. the tendency has been for the size of farms to increase. More and more land is being concentrated in the hands of fewer people. Mechanization of farming has caused this concentration of ownership, because small farmers can't afford to buy the labor-saving machinery they need to compete with corporation farms. As long as everyone has enough to eat there will be no political agitation to break up America's large farms. But a hungry population has an entirely different political outlook than one that is well fed. The soil and the land have always been prime subjects for political consideration, and they will continue to be.

Animal scientists at Purdue University say well-grown, early heifers from the best cows develop into the best producing cows. By selecting the larger heifers, they can be bred to calve at 24 to 30 months of age. Be sure that a good heifer gets a good start.

Abraham Lincoln's ideas about land constituted a sort of "anti-trust act" of the 19th century, when land was the primary business interest of the country. Today the monopolists have found other, more lucrative fields to work in.

The Future of Beef

Breeders should not lose sight of the need for continued improvement in a highly competitive market . . .

Condensed from South Dakota Farm and Home Research

C. A. Dinkel, Animal Husbandman, South Dakota State College

THE goal of the beef cattle industry is, and always has been, the production of high quality beef at the lowest possible production cost.

While this goal does not change, our methods of achieving this goal need to change as we continue to improve our cattle and as the competition within the meat industry increases. All types of industry operating on a competitive basis are faced with this continual need for improvement in production efficiencies.

Recent estimates indicate that we might expect requirements for beef to increase nearly 50% during the next 20 years. While it is true that we will continue to have our cycles during these 20 years, the general trend over the period should be upwards with each succeeding high being higher than the preceding one and each low being higher than the preceding low.

It has been further estimated that only about one half of this increase can be obtained through increased numbers of beef cattle. In other words we must increase the yield of each individual animal by about 25%. Any way you look at it 25% more beef from each animal slaughtered is a large order. To fill this order it appears that every possible efficiency and every possible improvement available in the areas of management, feeding, breeding, marketing, and processing will be needed.

The breeders of beef cattle will play an important part in meeting this challenge. Recent research indicates that there is still room for selection to improve many of the characteristics that will be important in meeting the anticipated demand. Over-all industry requirements stated in a general way would include:

(1) A maximum amount of high quality lean meat distributed

Reprinted from South Dakota Farm and Home Research,
Agricultural Experiment Station, South Dakota State College, Brookings, South Dakota

in as high a proportion as possible to the high priced cuts.

(2) Dressing percentage as high as possible to meet the packer's requirements.

(3) All of these goals without sacrificing the production traits so important to the feeder and breeder.

In fact, further improvements in these production traits will be necessary if we are to meet the anticipated demand. The feeder will require animals that gain faster and more efficiently, and the breeder will need animals with hardy constitution, high fertility, good mothering ability, and rapid growth rate.

With so many areas to satisfy, the job of the breeder is complex. Finding the breeding animals that will satisfy all of these demands is not easy. Some antagonisms may even exist whereby going too far toward satisfying one area might actually be detrimental to another area. Research efforts in the field of beef cattle breeding are being directed toward establishing:

(1) The relative importance of heredity and environment in determining the important beef traits.

(2) The relationships among the many important traits of beef cattle in order to evaluate any possible antagonisms that might exist.

(3) More efficient methods of selection which will help the purebred breeder in the selection of his breeding stock.

Research already completed has demonstrated the usefulness of, and the methods for, improving mothering ability and rate and efficiency of gain in our beef cattle. Some breed associations and most state Extension Services have established programs whereby breeders can participate in a performance testing program. These programs simply involve the keeping of records, usually taken in some uniform manner. Performance testing or

There is only one sure way to find out whether your crops are getting enough of the nutrients they need—a soil test.

the keeping of these records will be of no use, however, unless the records are used in the selection of breeding stock. As the work continues further improvements in these programs should be forthcoming.

Research information in the area of selecting for improved carcass traits is not as abundant as in the case of production traits. However, considerable research effort is being expended in this direction. Preliminary results indicate that heredity may play an important role in determining

carcass merit and that there are very desirable animals being marketed today, animals that are superior in many of the traits that need improving. It appears that the location and multiplication of the animals capable of producing offspring as good as our better animals of today will go a long way toward accomplishing what we need to do in the next 20 years. Probably our greatest need at this time is to find simplified methods of establishing which breeding animals will produce offspring of desirable carcass merit.

Beef has always enjoyed a very enviable position in regard to consumption preference for meat. If consumers have the money to buy beef, they will buy it in preference to other meats. However, we should not forget what happened to the butter industry. If we do not provide sufficient beef at a price the increasing population can afford, we will be subject to the danger of losing a valuable part of our market. We should not lose sight of the need for continued improvement in a highly competitive field since the recovery of a lost market is a slow process.

This does not mean that we are being challenged severely by competition today. It means only that we should be looking for ways to keep far enough ahead of the competition so that we will not be severely challenged. Increased production with decreased costs through greater efficiencies is the goal we should be reaching for.

Moving towards this goal does not require radical changes in either our cattle or our operations. It does require, however, the adoption of methods of improving on each of these when these methods have been proven to be effective.

Low-Cost Labor

The farmer who is doing the work that could be done by a motor is getting less than a nickel an hour for his trouble.

It has been estimated that a normal man hard at work exerts about one-tenth of one horsepower. In other words, the one-fourth horsepower hand drill can outwork him. A motor large enough to run a corn sheller, post drill, small cement mixer, or grinder capable of grinding 40 pounds of feed per hour operates for one to two cents per hour. —*Louisiana State University*

A THOUGHT A DAY

TO KEEP THE PSYCHOANALYST AWAY

From the Collection of Everett Smith

The great use of a life is to spend it for something that outlasts it.

★ ★ ★

A business that makes nothing but money is a poor business.

—*Henry Ford*

★ ★ ★

Every man has a better chance in this world than he ever takes. Here are three rules to avoid failure: Worry less but work more; waste less but give more; preach less but practice more.

★ ★ ★

Cease to inquire what the future has in store, and take as a gift whatever the day brings forth.

—*Horace*

★ ★ ★

Good humor isn't a trait of character, it is an art which requires practice.

★ ★ ★

Our duty is to be useful, not according to our desires, but according to our capacities.

★ ★ ★

Most of the shadows of this life are caused by standing in your own sunshine. —*Emerson*

Happiness is best attained by learning to live each day by itself. Worries are mostly about yesterday and tomorrow.

★ ★ ★

Friendships are fragile things, and require as much care in handling as any other precious thing.

★ ★ ★

Light is the task where many share the toil.

★ ★ ★

The difference between failure and success is the difference in doing a thing nearly right and doing it exactly right.

★ ★ ★

You will become as small as your controlling desire; as great as your dominant aspiration.

★ ★ ★

The people to fear are not those who disagree with you, but those who disagree with you and are too cowardly to let you know.

★ ★ ★

The important thing in life is to have a great aim, and to possess aptitude and the perserverance to attain it. —*Goethe*

It's what you learn after you know it all that counts.

★ ★ ★

The only kind of letters a woman likes to receive from a man are those which should not have been written.

★ ★ ★

Be to large for worry, too noble for anger, too strong for fear, and too happy to be submerged by trouble.

★ ★ ★

Personal freedom cannot endure without individual responsibility.

★ ★ ★

An educated man must be able to study and to think without guidance from others. He must be to some extent, a thinker, not a mere imitator.

Liberty is one thing you can't have unless you give it to others.

★ ★ ★

They that govern most make the least noise.

★ ★ ★

The absent are like children, helpless to defend themselves.

★ ★ ★

Judgment is forced upon us by experience.

★ ★ ★

The superiority of some men is merely local. They are great because their associates are little.

★ ★ ★

From contemplation one may become wise, but knowledge comes only from study.

★ ★ ★

Acting is the ability to make people stop eating pop corn.

Skimpy Hog Rations Cost Money

Some hog producers mistakenly try to cut ration costs by skimping on vitamins, minerals and antibiotics, according to John H. Shropshire, University of Delaware.

This actually costs more money in terms of reduced gains, he said. Skimping on vitamins, minerals and antibiotics is a poor way to save because they cost relatively little whether purchased in a mixed supplement or bought separately and blended on the farm.

Shropshire said soybean meal is often used as a protein supplement. Although it contains an adequate balance of amino acids, it is low in several vitamins and minerals that hogs need. Adding these items, plus antibiotics, to a mixture of corn and soybean meal will greatly improve the performance of your hogs, he said.

Producers will get poor results if they neglect any needed nutrient in the ration. —*University of Delaware*

Land Improvement Through Brush Control

Brush-infested land can be used productively if treated properly . . .

Condensed from Soil Conservation

Harry M. Elwell, Oklahoma State Univ.

MILLIONS of acres of land produce little of value because scrubby, woody vegetation prevents the growth of desirable grasses, legumes, or trees.

Scientists are rapidly developing methods for conversion of brush lands to greater production through new and more efficient control methods.

Cooperative investigations have been conducted during the last 25 years by brush-control researchers of the Department of Agriculture and the Oklahoma Agricultural Experiment Station. Similar studies have been made in several other States.

Investigators agree that site consideration is highly important in determining whether brushland can be profitably treated. The best methods for eliminating brush vary greatly because of the wide range of woody plants and grasses and the differences in climate and soil.

Before making treatment on brush-infested land, the fertility level, depth, and erodibility of soil should be determined. Special precautions are necessary during removal of brush from soils extremely low in fertility and readily subject to wind or water erosion.

Deep soil that can be cultivated after the brush is removed may be advantageously cleared by mechanical methods. Disk plowing the soil in the spring and fall for about 3 years will usually eliminate sprout growth. After the regrowth has been suppressed desirable grasses and legumes may be successfully introduced.

On the deep soil sites where timber production or growing of pecan or other nut-bearing trees is profitable, the weed-trees and brush species may be eliminated by hand cutting and treating of stumps with herbicides or by basal

Reprinted from Soil Conservation, Soil Conservation Service, U.S.D.A., Washington, D. C.

bark or injector treatments with 2,4,5-T.

In Oklahoma and other nearby States good control of post, blackjack, and dwarf chinquipin oaks and scrub hickory has been obtained from aerial spraying during active foliar growth (May 15 to July 15) with low-volatile esters of 2,4,5-T.

Three herbicide applications were necessary for kills approaching 100 percent of the oaks and hickory. The amount of low-volatile 2,4,5-T ester for maximum kill has usually been 2 pounds of acid in 5 gallons of emulsion spray per acre for a first spraying with another 2 pounds 1 or 2 years later followed with 1 pound as a third application. Two aerial sprayings generally give 60-to-80 percent brush kill and permit good grass recovery.

Brush control has resulted in production of 2 to 5 times as much native grass as on untreated areas and the treated areas have remained free of woody-plant reinvasion for 6 to 8 years. It appears that such areas will not need control measures for several more years if good grazing practices are maintained.

Shinnery oak and mesquite can be effectively controlled with aerial applications of low-volatile esters of 2,4,5-T. These species are satisfactorily suppressed with ½ pound of 2,4,5-T per acre. Retreatments of mesquite are usually required every 6 to 8 years. Shinnery oak usually needs 3 consecutive annual spray applications for maximum kills.

Elm, hawthorn, ash, mulberry, buck brush, and green briar have been resistant to 2,4,5-T in aerial spray applications. These species have been effectively controlled by ground treatments with 2,4,5-T. Buck brush and sumac have been effectively suppressed with applications of low-volatile and high-volatile esters of 2,4,-D. As they approach full leaf, these species should be treated with 1 poumd of 2,4-D acid per acre. Annual retreatments for several years have sometimes been necessary to eliminate buck brush.

An adequate rural water system should supply a minimum of 50 gallons of water per day per person with additional allowances for livestock. Most people find that they use even more than this.

Persimmon generally is not killed with 2,4,5-T aerial sprays, but it may be defoliated with 2,4,5-T or 2,4-D. On persimmon, 1 pound of acid of 2,4,5-T ester per acre applied as a ground spray has produced fair control. Two or three annual retreatments with the same amount of herbicide will

usually give satisfactory control.

Drenching the foliage with herbicidal sprays applied from the ground has been effective in eliminating many non-commercial hardwood brush and tree species. For this type of treatment 2 to 4 pounds of low-volatile ester 2,4,5-T has been required to obtain good control. Annual retreatments often have been necessary to eliminate all the unwanted brush and trees.

Basal bark and stump applications, injections, and soil treatment have given effective killing of single plants of most hardwood species. Many brush plants not susceptible to foliage sprays may be killed with basal bark, injections, or soil applications.

Basal bark applications are made by mixing the esters of 2,-4,5-T at 12 to 16 pounds of acid (3 to 4 gallons of herbicide) with 100 gallons of diesel oil or kerosene. This mixture should be applied to wet the lower 10 to 12 inches of the bark of each stem. The application should encircle the plant with some rundown of spray on the bark below the soil surface to control the dormant buds usually located just below the surface of the soil. These treatments have been most effective on plants less than 5 inches in diameter. Larger plants should be frilled with an ax before being treated. The ax incisions should be made to permit the herbicide-oil mixture to penetrate into the inner bark of the tree.

An injector has been an efficient tool for placing esters of 2,4,5-T—40 pounds (10 gallons) of acid mixed with 90 gallons of diesel oil—in the inner bark of trees. The injections for most of the woody species should be spaced 1 inch apart and encirle the plant. Injections made near the soil line permit the herbicide to be readily carried into the root system.

Basal bark and injection treatments have given satisfactory control when made throughout the year. But applications during the winter, when plants are dormant, are often preferred.

In 1950, cities and towns used 14 billion gallons of water a day. By 1975, the nation's towns and cities are expected to require more than 20 billion gallons of water daily.

Sprouts on stumps have been prevented by applying sixteen pounds (4 gallons) of 2,4,5-T ester in 96 gallons of diesel oil or kerosene immediately after cutting. The edge of the cut and the bark on the stump to the soil-line need thorough treatment. Some rundown of spray on the bark

below the soil surface is advisable.

Soil treatments have been made with monuron (3-(p-chlorophenyl) -1, 1-dimethylurea) and fenuron (3-phenyl-1, 1-dimethylurea) 80 percent wettable powder by mixing ⅛ to ¼ pound to 1 gallon of water and applying a band 6 inches wide on the soil around each plant. Pellets of these materials, at 25 percent concentration, have also been used. Fenuron has been most readily active on the majority of the woody species. Most of the oak species are affected with rates as low as 6 pounds of active chemical per acre. Higher rates give more consistently good results under variable soil and climatic conditions.

Monuron and fenuron are more effective on plants growing in sandy soils than on those in clay or clay loam soils.

Elms and persimmon have been killed with monuron and fenuron; they usually do not die, however, until the second year after being treated.

The 2,4-D and 2,4,5-T formulations are relatively low in toxicity to soil, man, animal, and most of the grasses. If not properly applied (particularly aerially) 2,4-D and 2,4,5-T may drift or float in air currents, and move from the area of application to adjacent areas and affect desirable field-crops or woody plants. However, they have been safely used for several years on pasture and range lands. Better ways are being developed for greater safety in their application.

Monuron and fenuron will often suppress native grasses, cause slight soil sterility, and are toxic to many of the desirable woody plants. Care should be taken not to apply these materials where they will be carried in runoff or irrigation water.

Management practices such as fire protection and deferred grazing have been valuable aids in establishing desirable vegetation on brush-infested areas that have been treated with chemicals. Areas that have been accidentally burned 1 and 2 years after being treated have had more root sprouts than unburned areas. Litter on unburned areas reduces wind and water erosion while the grasses are becoming established. The oaks and hickory plants dying from the effects of 2,4,5-T usually fall in small segments; thus there is very little possibility of injury to grazing livestock.

Deferred grazing on native rangelands from May 1 to October 15 for two seasons following application of 2,4,5-T has permitted the native grasses to develop an excellent sod, good forage production, and fair seed yields.

The Federal Seed Law

Know the law and regulations concerning crop seed. It will help you buy better quality . . .

Condensed from Congress On The Farm

ONLY seeds shipped in interstate commerce are directly affected by the Federal Seed Law. However, for the past 20 years this law has helped to maintain high standards for all agricultural seeds in commerce.

Seeds sold outside the area of the producing state must contain labels and meet certain purity and germination tests. The following is what the law and regulations require:

On The Label

1. Kind of seed—each one over five percent.

2. Kinds and quantities of all noxious weeds.

3. Date of germination tests.

4. If chemically treated, the type of treatment and, if toxic, the word "poison" in bold type.

5. If certified, an official label by an agency authorized by the state to certify seed, stating that the seed is certified or registered.

Quality Standards

Germination tests must have been made within five months prior to shipment.

Records

Records on origin, germination and purity must be kept on each lot of seed for three years.

Warranty

1. The shipper impliedly warrants that the seeds are as indicated on the label.

2. He may not deny or modify any of the requirements of the law by disclaiming or limiting his warranty of the seeds.

Advertising

1. Advertising must be true and accurate.

2. False advertising will bar seeds from interstate shipment.

The Federal Seed Act also covers entry of foreign seeds. Excluded are seeds (1) that contain over five percent of another seed (except mixtures of alsike and red or white clover and certain other mixtures designated by the Secretary of Agriculture); (2) that have a high noxious weed

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content or that have less than 75 percent pure live seed; and (3) that are stained contrary to regulations of the Secretary of Agriculture. (Note: Imported alfalfa and red clover must be stained to indicate country of origin. Most of these seeds come from Canada.)

There is, of course, continuous sampling, testing and inspection of seeds. Stiff penalties apply when persons knowingly violate this law. A fine of up to $1,000 may be imposed for a first offense and up to $2,000 for subsequent violations. Shipments in violation may be seized and destroyed.

One exception in the law covers farmers who sell seed they have produced directly to a consumer in another state. None of the above provisions apply to such sales.

It appears that this law has done a great deal to standardize the seed market, to make certain that buyers are informed about the seeds they are buying and that seeds moving in interstate commerce are suitable for planting.

You'll See More Asphalt Paved Barnyards

We'll probably see more barnyards paved with asphalt in the future. Ed Burns, University of Wisconsin farm engineer, says asphalt gives good results where proper materials are used and recommended construction details followed. You need to get a qualified contractor to do the job.

The first part of the job is to thoroughly clean away all foreign material and manure. Then roll the bare soil. For the base, use crushed limestone or slag. Spread uniformly and pack with a roller weighing not less than five tons. You need a packed layer around four to six inches deep on sandy or average soils. If the soil is heavy clay, the base course needs to be six inches thick or more.

Bruns says the asphalt pavement should be a "dense and stable mixture" which will permit easy cleaning with a tractor and scraper or front end loader. Cows will slip on a surface that is too smooth.

He recommends the asphalt be two inches thick. Make it three inches, where the pavement butts up to feed bunks and watering facilities. Plan a slight slope for good drainage.

Put the asphalt down hot. Spread uniformly and pack with the roller used on the base material. —*University of Wisconsin*

Milk Withholding Time

Time for withholding milk from antibiotic treated cows varies widely, say experts. Recommendations are suggested here . . .

Condensed from The Republic Farm Spokesman

ANTIBIOTICS as a "cure all" can never substitute satisfactorily for good management.

The only ultimate answer to the elimination of antibiotics from milk will be better farm management which will produce less mastitis, and thus require less antibiotic therapy. Recommendations withholding times for milk from cows treated with antibiotics are necessary in order to comply with the Standard Milk Ordinance and Code and the Federal Food and Drug Regulations.

Many commercial preparations are on the open market for the control and treatment of mastitis. Each preparation has a distinctly different formulation even though a common antibiotic may be used. This leads to great variation in the length of time that the antibiotic may be detected in milk after treatment.

From 72 Hours To 8 Days

Based upon limited field trials, it would appear that when penicillin in a water base has been infused into the udder, no antibiotic residue can be detected after 72 hours. However, when an oil base was used, the penicillin was detectable for as long as eight days. These observations indicate that the general recommendation of withholding milk for 72 hours, which has been in common usage and appears on the labels of most commercial products, is not adequate for all preparations.

Recent trials have demonstrated detectable amounts of penicillin in uninfused quarters when the antibiotic has been infused in one or more quarters.

When Injected Intramuscularly

When intramuscular injections of antibiotics are used for treatment of mastitis or for any other

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disease in a lactating cow, the antibiotic will be found in the milk. Consequently, it is necessary to withhold this milk from the milk supply—the length of withholding time varying with each product and dosage used. The veterinarian administering such treatment can advise if more than five days withholding time should be observed.

Fed Antibiotics Show in Milk

If antibiotics are fed in sufficient amounts to produce detectable levels in the blood and to have any therapeutic effect, the antibiotic will be present in the milk. The use of any antibiotics in feeding programs for milking cows should be discouraged.

Recommendations for Use

The following recommendations, based on available informative sources, are suggested for general use. However, prevailing circumstances in a particular situation and the characteristics of the particular preparation used may necessitate modifications.

1. *Udder Infusions*

a. Penicillin—strictly aqueous base—withhold milk from all quarters at least 72 hours.

Penicillin—strictly oil base—withhold milk from all quarters at least 8 days.

Penicillin—combined aqueous and oil base—withhold milk 8 days or according to label instructions.

b. Terramycin or Aureomycin —aqueous or oil—withhold milk from all quarters for at least 6 days.

c. Other antibiotics or drugs—milk must be withheld in accordance with instructions.

II. *Untreated Quarters*

Antibiotics can appear in untreated quarters of an udder after one or more quarters are treated. Therefore, when one quarter is treated, the milk from all quarters must be withheld.

III. *Intramuscular or intravenous injections*

Milk should be withheld a minimum of 5 days or longer depending upon circumstances.

IV. *Feed supplements*

Antibiotic-containing feeds are not recommended for dairy cows.

Farm Accidental Deaths

Accidental farm death rates connected with machinery, drownings, firearms and electricity are increasing. Make plans now for preventing farm accidents on your farm in 1961. In fact, accident prevention is a good starting point for New Years Resolutions.

Farming Without Soil

About the science of hydroponics . . .

Condensed from The National Future Farmer

R. W. Skulski

SINCE Sputnik I, scientists have turned with new interest to *Hydroponics*—the science of growing plants without soil.

Here may lie the means of providing fresh vegetables for the inhabitants of a moon base or the long range space traveler of tomorrow. You, too, can learn the fundamentals of plant nutrition and how to influence growth, with a simple yet fascinating soilless garden.

Soil is not necessary for growing plants, but only certain chemicals found in it. When these chemicals are provided, no dirt is necessary. To start, you will need some salts, water, sand, a spirit of adventure, and a desire to learn how to better control the growth of plants.

Water

Plants receive nourishment by absorbing water from the ground in which certain chemicals have naturally dissolved. Follow nature's example and begin with water. Rain water is best because it has few dissolved chemicals in it. You do not want to carefully measure out a desired chemical and add it to water which may already have it; or perhaps elements you do not want at all. A barrel under the down spout will supply ample water of good purity.

Chemicals

The next step is to mix a nutrient solution. Over the years analyses of different soils and plants have yielded a list of essential elements for growth. These are nitrogen, potassium, phosphorus, magnesium, and calcium. Plants grow best with their own proportions of these elements. Fortunately, a good average mixture for most plants can be made to start (see table at end of article). Variations of this mixture for individual types of plants can be tried and will produce a variety of interesting results.

These chemicals can be obtained at your local drugstore. Very small quantities of manganese sulphate and boric acid have been found helpful to plant growth; however, for your first try at soil-

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less gardening let's leave them out. Later you can experiment by adding one or both of them. Your chemicals may be mixed dry and dissolved in a little hot water. When completely dissolved, this concentrated solution is added to enough cool water to make the required 4½ gallons.

Sand

No less important is the medium in which the plants are to grow. Sand provides sufficient support, holds the nutrient solution long enough for roots to absorb it, and is inexpensive. Although plants may be grown directly in a solution, special pains must be taken to support them. It is easier to begin with a simple sand garden.

Here, as with the water, make sure the sand is reasonably pure. Most sand will contain some dissolvable material. It must, therefore, be washed and soaked thoroughly with rain water. Keep rinsing until the water draining off is perfectly clear. Then soak in rain water for several days with occasional stirring to dissolve the more slowly dissolving elements. Hot water will help. What we desire is a neutral bed of pure silica which will offer root support and no more.

Next, you need the proper grade of sand—neither too fine nor too coarse. Coarse sand will not keep the solution around the roots long enough. Very fine sand will do this too well, so that when fresh nourishment is provided, you will be unable to wash away the old. For a simple test, fill a flower pot with the sand and pour water on it in a steady stream. If the water drains away quickly with only momentary puddles, your sand is all right. Add a little fine sand if too coarse, or some small pebbles if too fine.

Beds

The next step is to provide a suitable bed. Flower pots, cans, wooden or metal boxes, baking pans, or what have you can be used. Only three requirements must be met. First, there must be free drainage so that beds will not flood. Several small holes or slits covered with patches of screen will do. For a large outdoor bed, particular pains must be taken to insure good drainage.

For what avail the plough or sail, or land or life, if freedom fail? —Emerson

Second, the container must not corrode. Stay with earthenware, wood, or aluminum, or else coat all surfaces in contact with the sand with an asphalt base paint.

Third, provide enough depth for the root system to grow. You cannot grow carrots in a shallow

You Grow Corn; I'll Feed The Pigs

An economist sees more specialized farms . . .

Condensed from Midland Cooperator

HOG and corn production may some day be separate enterprises for different farms.

Oswald Blaich, U.S. Department of Agriculture economist at the University of Minnesota, says many factors which originally made combined corn and hog production successful are now being destroyed. He foresees specialized hog farms, with trained managers, special veterinarian service and professional feed advisers.

However, he adds, the hog farm of the future probably won't be a vertically integrated setup, but instead will be a highly specialized operation.

Mr. Blaich feels that "vertical integration of hog production with feed manufacturing is likely to be weak and transitional" until the "new entrepreneurs of the hog producing industry" take over.

He predicts that in the transition to hog specialization, "some of the weaker forms of vertical integrated structures may fall under pressure of specialization.

"There is already a tendency for some feed dealers to specialize by engaging only in growing and fattening, and to depend on the feeder pig market for their supply."

Mr. Blaich points out that multiple farrowing is changing hog production from a part-time to a full-time job. Labor and management for hogs can no longer be drawn from off seasons in corn production. Research is lowering the disease risk.

However, he adds, the trend toward specialization would probably be slow. Specialized hog producers would need more capital and would be likely to form or integrate with separate corporations to acquire it. Experienced managers, at first, would be hard to find.

Hogs won't necessarily leave the corn belt, according to Mr. Blaich. It's more likely that hog farms will concentrate around packing house locations found in

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Midland Cooperator, 739 Johnson Street, N. E., Minneapolis 13, Minnesota

the Midwest.

Initially, feeder pig sales may increase somewhat. In other words, specialization may go only part way to a temporary split between feeder pig production and growing and fattening. However, he questions whether seasonal feeder pig production would satisfy markets rapidly changing to year-'round production with more emphasis on quality.

Will our hog producers be more likely to enter contracts with feed manufacturers in the future?

Not necessarily, Mr. Blaich says. So far, the likeliest candidate for contractual operations is the producer "who has not acquired the latest techniques nor the necessary managerial skills for a successful operation. As a result, he has probably also suffered the problem of capital acquisition."

In such a situation, a feed contract may be quite attractive; it helps the producer make up for deficiencies. However, the economist feels the attraction may be temporary. "In time, these producers learn the essentials of efficient production and their dependence on the feed manufacturer is reduced."

Promotional activities of feed manufacturers are likely to continue to intensify, Mr. Blaich said, at least until the potential market for hog feed is exhausted. He concluded that how fast feed manufacturers spread new technology and aid in financing will influence the rate at which hog production practices change.

B.H.C. Blacklisted As Dip or Spray For Cattle

B.H.C. (benzene hexachloride) has been removed from the United States Department of Agriculture's approved list of livestock sprays and dips and should not be used, says Dr. William W. Brown, extension veterinarian at Colorado State University.

Brown said the reason given for blacklisting B.H.C. is the possibility of residues remaining in the meat of slaughter animals. It was never approved for use on dairy cattle, nor are the other systemic parasite controls approved for dairy cattle in production.

For meat animals Lindane, Toxaphene, Co-Ral or Korlan are approved as sprays and dips, provided manufacturer's instruction on the container are followed.

Systemic compounds for the control of parasites penetrate the skin of the animals and work through the animal's system. Some are given orally as a bolus. —*Colorado State University*

Why Keep A Beef Herd?

There are at least two requirements for a good herd — good planning and good management . . .

Condensed from The Shorthorn World

Henry Mayo, Purdue University

THE greatest recommendation for a beef herd is the assurance that the American public likes to eat beef.

The total consumption of beef has increased by 50 percent — nearly five billion pounds since 1950. Retail prices for beef have been very satisfactory when compared to prices of pork, lamb and chicken.

The big advantage that beef cow herds have is that they thrive on forages and pasture. Beef cows are labor savers. During the pasture season (6 to 10 months) a cow will harvest her own feed, nurse her calf and even spread her own manure. During the winter, most beef cows are kept outside. Rolling land with natural drainage and a few trees is the best place on earth for cows, winter or summer.

A well managed beef herd can be profitable. Three young cows with heifer calves can grow to a herd of 30 females in 10 years if the females are saved. A good friend of mine bought his two 4-H boys a good cow with a heifer calf 19 years ago. At a recent dispersal sale they sold 82 cattle for more than $20,000 and in the meantime they had sold $32,000 worth of cattle, mostly steers. There are case histories like this in nearly every community. One reason for the success of the above mentioned enterprise was that the cattle were useful regular breeders, a little above average in size and mated to good bulls.

Essentials for Profit

In any successful livestock enterprise there are at least two requirements — good planning and good management.

To be profitable cattle must (1) gain rapidly and (2) provide a superior carcass with a maximum of lean meat or natural muscling.

Herd bulls should weigh at least 1,000 pounds at 12 months or 1,250 pounds at 18 months in good growing condition. Unless we breed for good cattle with

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good gaining ability, we will never get them.

Good management is the key to profits from any herd of cows. Calves that are born early in the year can use large amounts of grass through their mothers milk and the grass they eat themselves. Creep feeding is advisable in some cases but the important thing is strong early calves and plenty of grass for the calves and their mothers. Cull and sell any females that are poor mothers or that lose their calves. Castrate and dehorn at one to three weeks of age. Keep the cattle as quiet and comfortable as can be arranged.

One more thought — high operating costs, expensive machinery, labor, fuel and crop surpluses are a terrible threat to the agricultural economy. Animal agriculture eliminates crop surpluses. The farmer who can make money with grass can save labor and operating costs while he is conserving and improving his soil. At the same time he need not contribute to crop surpluses.

The only way to make profits with grass is with a good livestock program. Gains on pasture alone cost 8 to 12 cents per pound if the management is right.

No one knows what is ahead in agriculture. However, the man with a well managed practical working herd of beef cows is ready for almost anything that may come. If grain becomes cheap enough, he can buy what grain he needs instead of producing his own. If grain becomes too expensive, he can make cheap gains on pasture.

It is much easier to keep up than to catch up.

Rather than be terrified by thoughts of inflation, over production, integration, let every cowman study his job. Grasses can be produced and utilized. Cattle breeding and management can be improved and the American public will reward those who do it.

Paint Can Increase Building's Life 40%

The life span of farm buildings can be increased by as much as 40 per cent merely by keeping them painted.

Engineers with the Florida Agricultural Extension Service say you can't wait until deterioration starts and then paint if you want to get the best use of your paint. Buildings should be painted soon after construction, and again as needed throughout the lifetime of the building.

—University of Florida

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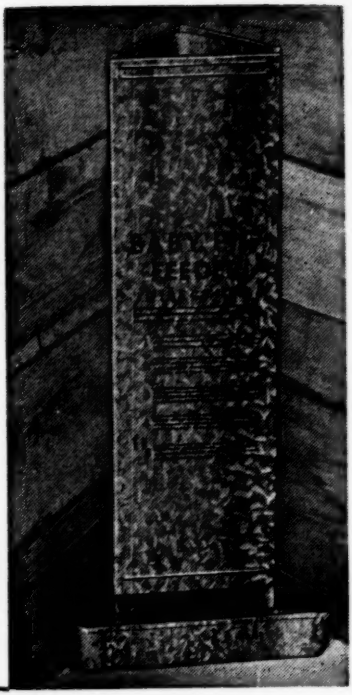

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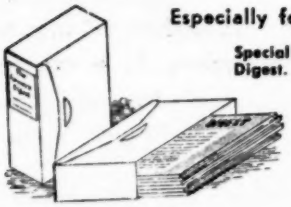

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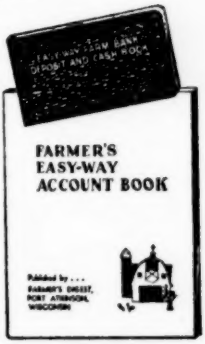

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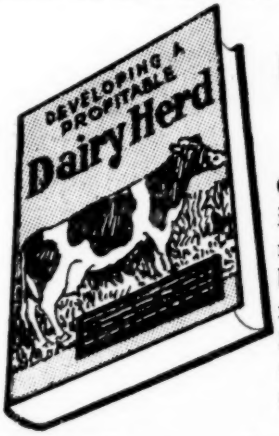

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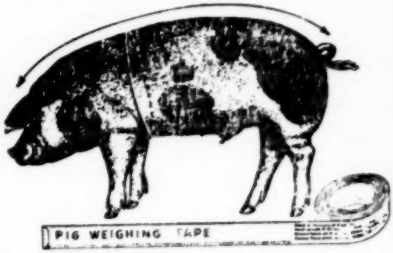

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